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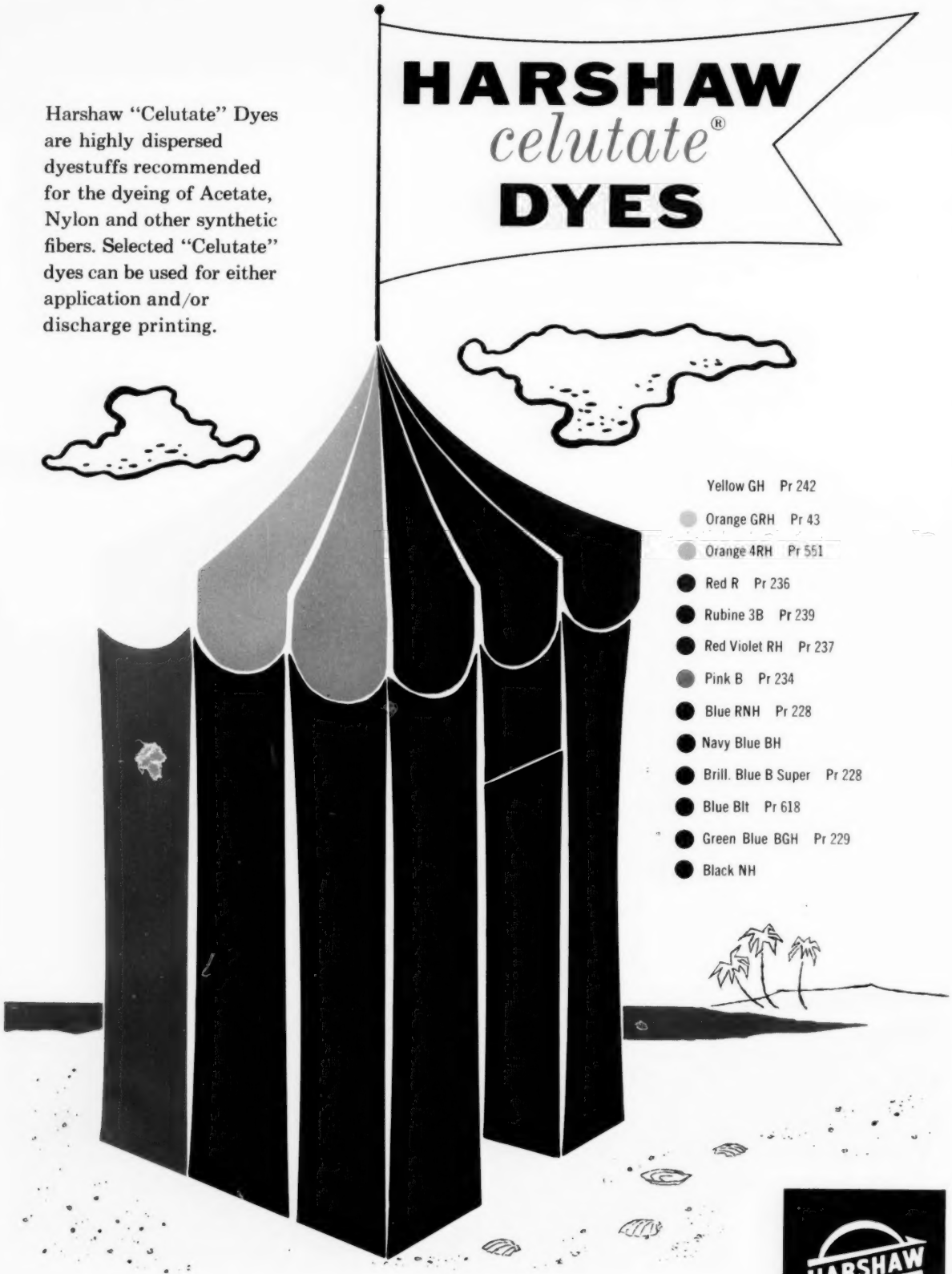
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PERFORMANCE OF SELECTED RESIN-TREATED PERCALES

JEWEL GOLDEN
Assoc Prof
Textiles and Clothing
Univ of Maryland

HAZEL T STEVENS
Head
Dept of Textiles and Clothing
Florida State Univ

HELEN L RICHEY
Asst Prof
Textiles and Clothing
Florida State Univ

Percales having three finishes ("minimum-care," wrinkle-resistant, and Sanforized) were studied under controlled and uncontrolled laundering methods. Skirts made from the fabrics were worn by preteenage girls over a period of 20 weeks, which included 10 launderings.

Routine laboratory analyses were made of the new fabrics and of fabrics from each of the 69 skirts involved after one, three, five, and 10 launderings. Various types of appearance ratings, including the use of the Cranston scale, the Monsanto photographs, and some original scales, were made at the same intervals.

Findings showed differences existing between objective and subjective measurements. Objectively measured differences in wrinkle-recovery values of the two resin-treated fabrics were not compatible with visual differences as indicated by appearance scores. With repeated launderings, the resin-treated fabrics decreased in wrinkle recovery; visual differences were not discernable.

The amount of time saved in ironing resin-treated over nonresin-treated percales was highly significant. As the finishing formulation changed from "minimum-care" to wrinkle-resistant to no resin, the ironing time increased.

A high incidence of the use of moisture (principally sprinkling) in the home-ironed resin-treated percales indicates a lag in consumer practices over manufacturer recommendations.

INTRODUCTION

THIS paper is based upon a doctoral dissertation study completed at Florida State University in May of 1958. In complete form, it was presented under the title "Performance of Resin-treated and Nonresin-treated Percale under Controlled and Uncontrolled Laundering Methods as Related to Consumer Satisfaction." The critique presented here purports to present some of the major aspects of the study.

The research was designed to incorporate the use of tentative testing and evaluation procedures under investigation at the time by the Wash and Wear Committee of the American Association of Textile Chemists and Colorists. As indicated in the original title, the angle of approach included actual consumer use and evaluation of the fabrics under investigation as well as laboratory analyses. It was hoped that this approach would yield data of some value to the AATCC's Wash and Wear Committee.

Specifically, the purposes of the investigation were a) to determine the performance of sixty-nine resin-treated and nonresin-treated cotton percale skirts under controlled and uncontrolled laundering methods, and b) to relate the laboratory findings to the use practices and satisfactions of the forty-two subjects whose cooperation made the study possible.

The most notable factors revealed through analysis of the data clustered around wrinkle-recovery and ironing facts. General methodology along with these two pertinent aspects of the findings are presented here.

EXPERIMENTAL PROCEDURE

SELECTION OF SUBJECTS——The population of this study consisted of twenty-two preteenage girls and their mothers or mother substitutes. The girls were selected from the fifth and sixth grades of the elementary schools in Tallahassee, Florida on the basis of their interest in, and desire to participate in the research project. The participating subjects ranged from lower-middle to upper-middle socio-economic class as measured by the McGuire-White Index of Social Status—Short Form (*1*).

FABRICS——The test fabrics were three colors of eighty-square cotton percale provided through the courtesy of the Cranston Print Works Company, Cranston, Rhode Island. Each had been dyed with the same type of dyestuff and by the same method. Essentially the physical and chemical compositions differed only in color and final fabric finish. The test fabrics were coded as Types I, II and III. Type I percale was bright red and had been treated, by known formula, to impart a finish requiring minimum care. Type II was maroon and had been treated for wrinkle resistance, by known formula, using the same basic resin as type I. Type III was navy blue and had been given only a starch-Sanforized finish.

GARMENTS —— The test garments were gathered skirts. Each of the twenty-two preteenage girls who served as subjects for the study was given three skirts, one from each of the three test fabrics. All skirts were identical as to cut, construction, and proportion. Each skirt had a swinging panel of self-fabric at each side, attached to the underneath side of the waist band. These panels were eight to ten inches wide, depending on the length of the individual skirt, and extended from the waist band to within one-half inch of the lower edge. The purpose of the panels was to provide four pieces of worn and washed fabrics for laboratory testing. The tests were made using one half of a panel at a time, at the ends of the first, third, fifth, and tenth launderings, respectively.

HOME CARE PROCEDURE——The number of wearings possible for the skirts between designated laundering dates was subject determined. Each preteenage subject kept a wear calendar on a form that was provided. On this form she recorded the number of times each skirt was worn and the places to which it was worn. She was free to wear either or any of the skirts as many times as she chose; however, it was required that each skirt be worn at least once between laundering dates.

The adult subjects were responsible for the upkeep of the skirts. They were *not* told that there was any difference in the percales of the three skirts. Minimum restrictions were imposed upon laundering procedures. The adult subjects were asked to always wash the three skirts together in the same suds and rinse them together in the same rinse water for the purpose of assuring each skirt identical treatment. They were also asked not to use bleach or starch. Otherwise they were free to follow the customary laundering practices used in the home if they chose to do so. In each case, records were kept of the laundering procedures used by recording them on check-type data sheets which were provided.

The ironing time for each skirt (if the subject thought the skirt needed ironing) was also kept and recorded on the same data sheet. Stop clocks were provided for each participant to use. Prior to the first date for laundering the project skirts, each adult subject was asked to establish her ironing rate on five of her daughter's nonproject skirts. The time required for ironing each of these skirts was recorded on a special form from which the ironing average of each adult was calculated.

The adult subjects scored the skirts for ease of care at the ends of the first, third, fifth, and tenth launderings, using a five-point score card provided for that purpose. A score of 5 indicated that the skirt needed no ironing; 4 needed a touch-up job; 3 needed light all-over pressing; 2 needed complete dry ironing, and 1 indicated the need of moisture (sprinkling or steam iron). All data sheets were collected at the end of each laundering date, at which time new record forms for the ensuing wear period were left with the subjects.

The preteenage subjects were interviewed by the investigator, according to a structured schedule, at the end of the fifth laundering period, which marked the midpoint of the project. At the end of the project, each subject completed a questionnaire.

The adult subjects were interviewed, by structured schedule, at the ends of the fifth and tenth launderings (tenth and twentieth weeks) respectively.

LABORATORY PROCEDURE ——— Three sets of skirts were used as controls. One of these sets was never worn but was subjected to the laboratory-laundering procedures. The skirts in the other two sets were worn by two of the preteenage subjects for an average of twenty-four hours each between launderings. On the designated laundering dates, all three sets were laundered together according to a procedure prescribed by the Wash-and-Wear Committee of the American Association of Textile Chemists and Colorists (*2*). The procedure used was the less rigorous of two alternative methods proposed by the Committee. Washing was done in a home automatic agitator-type washing machine, using soft water of 105°F to which was added a sufficient amount of neutral soap to accomplish good soil removal. The water ratio was one pound of fabric to two gallons of water. The full washing cycle of the machine was used, which included twelve minutes of sudsing, followed by spray and deep rinses and spin drying. The skirts were dried in an automatic tumbler dryer, four-pound load. At the end of the drying period, each skirt was hung over a wire hanger and placed in the conditioning room for judging at two- and twenty-four-hour intervals.

The ironing procedure was self-selected and kept constant. The same steam iron was used for both touch-up pressing, if that was all a skirt required, or for heavy ironing, if that was needed. Ironing time was kept with a stop clock and recorded on the same data sheet form as that provided for the home-laundered skirts.

For determining shrinkage, a twenty-inch square was marked on a sample swatch of each of the three test fabrics. These were washed as part of the above washing load through five washings (*3*).

PHYSICAL TESTS PERFORMED ———Specific laboratory tests made on the new fabrics and on the samples taken from both laboratory- and home-laundered skirts after one, three, five and ten launderings were: weight, bursting strength, and wrinkle recovery (*4, 5*). Thread count, thickness, and air permeability tests (*4*) were made only on the new fabrics and on the skirts after ten launderings. The twenty-inch shrinkage samples were measured and the percent shrinkage recorded after each of the five launderings to which they were subjected.

APPEARANCE RATINGS OF LABORATORY-KEPT SKIRTS AFTER EACH OF THE TEN LAUNDERINGS———At the end of each washing and drying process, the nine control skirts were subjected to standard laboratory conditioning (70°F and 65% RH). At two- and twenty-four-hour intervals, a panel of three judges (two college instructors of textiles and the investigator) scored each skirt for appearance by two methods, the Cranston rating scale (*6*), and the Monsanto photograph scale (*2*). For comparison purposes, the Monsanto photograph scores were converted into Cranston equivalents (*2*).

The Cranston rating scale is a five-point scale on which number five represents the highest possible score and number one the lowest. According to this scale, scores of five, four, and three all indicate that a garment looks well enough to be worn without any ironing; whereas, numbers two and one indicate that ironing will be required for acceptable appearance. Using this scale as a basis for judging, the panel felt that the upper end of the scale was too high for the particular test fabrics under observation, and also too high to conform to their standards of acceptable appearance for a garment. Therefore, they chose to let numbers five and four on the scale be representative of a garment that they themselves would wear without any ironing. Number three indicated to them that the garment under question needed a touch-up pressing. In the case of the skirts this meant the waistband, hem and seams. Number two on the scale indicated to them that a skirt deserving that score would have an acceptable appearance if gone over completely with a dry iron. Number one was obviously indicative of needing a complete ironing after sprinkling, or ironing with a steam iron.

The Monsanto scale involved the comparison of each skirt with a set of nine numbered photographs of washed and dried fabrics scaled in appearance from no wrinkles (or equivalent to the new fabric) to a severe state of wrinkling (*8*). By this method the score that is given is the same as the number of the corresponding photograph; number one is the highest score, number nine the lowest. Two scores were given to each skirt, a warpwise and a fillingwise rating. Evaluations were made in accordance with the prescribed physical conditions as set forth by the AATCC Wash-and-Wear Committee (*2*).

APPEARANCE RATINGS OF LABORATORY- AND HOME-LAUNDERED SKIRTS AFTER THE THIRD, FIFTH, AND TENTH LAUNDERINGS ——— For the purpose of comparing the general appearance of the home-laundered skirts (kept by uncontrolled methods) to the laboratory-laundered skirts (kept by controlled methods), picture-show parties were planned and executed following the third, fifth, and tenth launderings. Each of the preteenage subjects wore her

three project skirts to the parties in rotation according to assignment. This provided a 7-7-6 ratio of each type of the home-laundered skirts at each party.

As a reference point for comparison, the laboratory-laundered skirts, worn by their respective representatives, were evaluated for appearance immediately before each picture-show party began and at the end of the movie, which was timed to last one hour. This judging was done by a panel of five, the original three plus two college instructors of clothing. Rating was according to a five-point scale comparable to the Cranston scale.

Following the post-movie evaluations of the laboratory-laundered skirts, the same panel and all of the preteenage subjects judged the appearance of each home-laundered skirt against its corresponding laboratory-laundered skirt. Scoring was done by a simple three-point scale for this. From the standpoints of wrinkling and general neatness, each home-laundered skirt was checked as looking "better than," "as well as," or "worse than" its laboratory counterpart.

RESULTS AND DISCUSSION

The most notable factors revealed through analysis of the data clustered around wrinkle-recovery and ironing facts, as shown by actual measurements, in comparison to subjective analytical findings.

WRINKLE RECOVERY ——— Wrinkle-recovery facts as shown by laboratory measurements and comparative appearance ratings from subjective evaluations were not in agreement.

It has been the general practice among research workers to report wrinkle recovery after the fifth laundering. This project also measured wrinkle-recovery angles at the end of ten launderings for the purpose of observing changes occurring with twice as much garment wear and twice as many launderings. The Monsanto wrinkle-recovery tester was used for measuring degrees of wrinkle recovery.

New specimens of type I fabric ("minimum-care") showed an average wrinkle recovery of 235 degrees. A decided increase was noted with the first laundering. This occurred regardless of the method of washing or the type of washing machine used. An increase in wrinkle recovery following washing, as explained by Reid and Reinhardt (7), is due to "recurring." Types II and III fabrics did not show this sort of change. They lost in wrinkle-recovery potential with the first laundering.

TABLE I

Average degrees of wrinkle recovery for new and laundered fabrics; percent of change after laundering

Skirt Fabrics			Wrinkle recovery			
			After fifth laundering		After tenth laundering	
Types	No. of skirts	New fabric	Degrees average	Percent change	Degrees average	Percent change
Type I		235				
Laboratory-laundered						
Not worn	1		237	+ 0.9	226	− 3.8
Worn	2		253	+ 7.6	215	− 8.5
Home-laundered	20		236	+ 0.4	224	− 4.7
Type II		239				
Laboratory-laundered						
Not worn	1		202	−15.4	211	−11.7
Worn	2		186	−22.2	211	−11.7
Home-laundered	20		199	−16.7	199	−16.7
Type III		211				
Laboratory-laundered						
Not worn	1		171	−18.9	160	−24.2
Worn	2		159	−24.6	163	−22.7
Home-laundered	20		153	−27.5	160	−24.2

Table I shows the average degrees of wrinkle recovery for the new and laundered test fabrics and the percentage of change after five and ten launderings. As can be noted in this table, type I fabric after five launderings showed essentially the same capacity to recover from wrinkling as did the new fabric in both the unworn laboratory-laundered and the home-laundered skirts. The laboratory-laundered skirts which had been worn still maintained wrinkle-recovery values 7.6 percent above the new fabric. This same fabric after five more wearing periods and launderings, a total of ten, showed a decided decrease in wrinkle recovery for all skirts. The greatest decrease is noted in the worn control skirts, a total of 16 percent. This ranged from 7.6 percent gain retained after five launderings to a low of 8.5 percent loss at the end of the tenth.

Wrinkle-recovery values recorded for type II fabric (wrinkle-resistant finish) showed a slightly higher average for the new fabric than was noted for type I, 239 degrees against 235. However, with five launderings, wrinkle-recovery values plunged downward in both the laboratory- and the home-kept skirts. This loss ranged from three to four times as much as was noted in type I fabric after it had been through ten launderings.

Type III fabric (nonresin-treated), as would be expected, showed the lowest wrinkle-recovery angles throughout.

According to Lawrence and Phillips (6), the minimum crease-recovery angle for acceptability is 240 degrees on the original fabric and 220 degrees after five launderings. In general, the type I test fabric was near the top of this scale after five launderings and still within the lower part of the range after ten. Although type II fabric showed a slightly higher wrinkle-recovery average on the new fabric, it dropped considerably below the lowest acceptable figure of 220 degrees by the time it had gone through five launderings. Type III fabric, with no resin treatment, scored considerably below acceptable standards for "wash-and-wear" even before being laundered.

In summary, objective measurements of wrinkle recovery indicate that, as the resin-finishing formulation changed from "minimum-care" to wrinkle-resistant to no resin, the wrinkle-recovery angles decreased. The wrinkle-recovery factor of the resin-treated percales also decreased with repeated use and launderings.

Subjective data relating to wrinkle recovery is tabulated in Table II. This table shows the averages of appearance ratings of the control skirts scored by two scales, the Cranston and the Monsanto. To facilitate comparisons, the Monsanto figures were converted into Cranston equivalents (2). Scorings were done at two- and 24-hour intervals after the skirts were washed, dried, and hung in the conditioning room. It will be recalled that a Cranston score of five is perfect, or equivalent to the new fabric, and a score of one is the lowest. It is evident from Table II that appearance scores at both the two- and 24-hour intervals are the same in the majority of cases and very nearly the same in instances where differences do occur. It may be said then that maximum wrinkle recovery on these fabrics was reached within approximately two hours after machine washing and tumble drying.

Further examination of Table II reveals that the general appearance

scores for type I fabric decreased by about one point over ten washings. Also after ten washings, Type II fabric showed a comparable rating to Type I by Cranston equivalents of Monsanto evaluations, and it was very nearly the same by Cranston evaluations. This indicates that measured differences in wrinkle-recovery values of the two resin-treated fabrics, as was noted under objective measurements, were not compatible with visual differences as indicated by these subjective appearance scores. Actual measurements showed a decided difference in favor of type I fabric; visual differences were not discernible.

TO IRON OR NOT TO IRON——— Each set of three skirts was washed and ironed ten times by each of the twenty adult subjects. This was an over-all total of 600 washing and ironing instances for the home-laundered skirts, or a total of 200 for each of the three types. The calculations in Table III are based on the total of 200 ironing instances for each type of fabric.

As seen in Table III, the most frequent procedure used for ironing skirts made of type I fabric was either all-over light pressing or complete ironing with a dry iron when the skirt was in a dry state. This was true in 55 percent of the total ironing instances. The second most frequently used method was to sprinkle and iron; this was used in 20.5 percent of the possible ironing instances. To this 20.5 percent add another 5.0 and 8.5 percents to include those who used moisture from a steam iron or ironed the skirts before they were dry. This gives a total of 34 percent, or essentially one third of the subjects who used moisture to iron percale skirts treated for "minimum-care."

Further observation of Table III shows that skirts of type II fabric were most frequently ironed when dry and with a dry iron; this procedure was used in 49.5 percent of the ironing instances. In about half as many instances, 26.0 percent, sprinkling and ironing was the procedure used. To the 26.0 percent, add another 12.5 and 10.5 percents for the other methods of incorporating moisture into the ironing procedure. The total is 72 percent, ie, nearly three-fourths of the subjects, used moisture to iron percale skirts treated for wrinkle resistance.

Sprinkling and ironing was the preferred method for ironing skirts made of type III fabric in 47.0 percent of the ironing instances. A total of 92 percent of the subjects used moisture in one form or another when ironing this fabric.

These figures indicate that, as the resin-finish formulation applied to the fabrics changed from "minimum-care" to wrinkle-resistant to no resin, the instances of using damp ironing to restore them to acceptable standards increased. It will also be recalled from the discussion of Table I that wrinkle-recovery values of the resin-treated percales decreased with repeated launderings. This would necessitate the need for more complete ironing with repeated use and launderings of garments made from these fabrics.

It is observed from Table IV that, in both the laboratory- and home-ironing situations, the mean ironing time increased as the resin-finishing

TABLE II

Averages of appearance ratings of laboratory-laundered skirts by the Cranston scale and the Monsanto scale converted into Cranston equivalents

Fabric type	Rating interval (hrs)	Ratings: First washing, Skirt not worn	First washing, Skirts worn	Third washing, Skirt not worn	Third washing, Skirts worn	Fifth washing, Skirt not worn	Fifth washing, Skirts worn	Tenth washing, Skirt not worn	Tenth washing, Skirts worn
Type I									
Cranston	2	—	—	4.0	4.0	3.0	3.0	2.0	2.5
	24	4.0	4.0	4.0	3.5	4.0	3.0	3.0	2.0
Monsanto in Cranston equivalents	2	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
	24	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0
Type II									
Cranston	2	—	—	2.0	2.0	3.0	2.5	2.0	2.0
	24	2.0	2.0	2.0	2.0	2.0	2.5	2.0	2.0
Monsanto in Cranston equivalents	2	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
	24	4.0	4.0	3.0	4.0	3.0	4.0	3.0	3.0
Type III									
Cranston	2	—	—	1.0	1.0	1.0	1.0	1.0	1.0
	24	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Monsanto in Cranston equivalents	2	2.0	2.0	2.0	2.0	2.0	3.0	2.0	2.0
	24	2.0	2.0	2.0	2.0	2.0	3.0	2.0	2.0

TABLE III

Percent of total home ironings of skirts by given methods

Method	Percent of Ironings: Fabric I	Fabric II	Fabric III
Steam iron	5.0	12.5	12.0
Dry iron			
Ironed after sprinkling and rolling	20.5	26.0	47.0
Ironed when partially dry	8.5	10.5	10.5
Ironed when dry	27.5	32.0	22.0
Pressed lightly all over	27.5	17.5	6.0
Pressed lightly in spots	8.0	1.0	0.5
Not ironed or pressed	3.0	0.5	0.5
Total	100.0	100.0	98.5*

*Three ironings were not recorded

TABLE IV

Significance of differences in the ironing time of skirts made from the three test fabrics when ironed in the laboratory and in the homes; ironing averages of nonproject skirts

Place of laundering	Fabric type	No. of ironings	Mean ironing time (minutes)	Mean difference (minutes)	Value of "t"	Level of significance
Laboratory	I	10	1.85			
	II	10	2.49			
	III	10	3.86			
	Nonproject	10	3.70			
Difference between:	III & I			2.01	4.67	.001
	III & II			1.37	3.04	.01
	II & I			0.64	1.56	.2
Homes	I	197	3.26			
	II	196	4.05			
	III	194	5.01			
	Nonproject	5	5.20			
Difference between:	III & I			1.75	7.00	.001
	III & II			0.96	4.80	.001
	II & I			0.79	3.16	.01

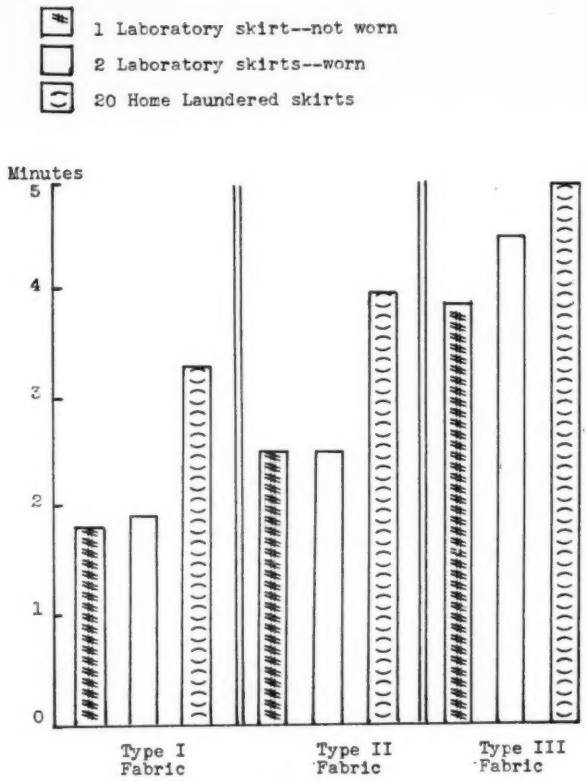

Figure 1
Laboratory- and home-ironing averages of skirts made from the three fabrics

formulation used on the fabrics changed from "minimum-care" to wrinkle-resistant to no resin. The difference in ironing time between each of the two resin-treated fabrics (I and II) and nonresin-treated fabric (III) is highly significant, being at the .001 and .01 levels respectively in the case of the laboratory-ironed skirts, and .001 in both instances for the home-ironed skirts. It is further observed that the ironing time between the two resin-treated fabrics (I and II) is significant at the .01 level in home-ironed skirts and not significant at this level for the laboratory-kept skirts.

In the case of the laboratory-control skirts, it is further noted in Table IV that, over ten launderings, the mean difference in ironing time between skirts of types III and I fabrics is 2.01 minutes. This means that the skirts treated for "minimum-care" were ironed in 52 percent less time than were the nonresin-treated skirts. The mean ironing difference between types III and II is 1.37 minutes. Thus, skirts treated for wrinkle resistance were ironed in 35 percent less time than were nontreated skirts. The mean ironing difference between skirts made from the two resin-treated fabrics (I and II) is 0.64 minutes, or an indication that skirts treated for "minimum-care" were ironed in 25 percent less time than were skirts treated for wrinkle resistance.

Over the 200 home-laundering instances, the amount of time saved on ironing resin-treated fabrics followed the same pattern as that found in the laboratory. Specifically, between skirts made from types III and I fabrics, the mean ironing difference of 1.75 minutes indicates that adult subjects ironed the "minimum-care" skirts in 39 percent less time than they did skirts made from nonresin-treated fabrics. Between types III and II there was a difference of 0.96 minute. This indicates that skirts made from the wrinkle-resistant fabric were ironed in 19 percent less time than were skirts made from the nonresin-treated fabric. There was also an additional 10 percent saving of time between skirts made from "minimum-care" and wrinkle-resistant fabrics.

Figure 1 illustrates by bar graph the relationship existing between the laboratory- and home-ironing averages of the skirts made from all three fabrics.

COMPARATIVE APPEARANCE RATINGS OF HOME- AND LABORATORY-LAUNDERED SKIRTS ——— Table V shows the results of rating the home-laundered skirts in comparison to their laboratory-laundered counterparts. Scoring was done by both the panel of five and the preteenage subjects. Total ratings for each of the judging groups at each party (described in procedure) were converted into percentages to offset any absences from the parties and to facilitate comparisons. Figures in the table indicate rather close agreement between the two groups on the appearance ratings of the resin-treated fabrics.

According to the adult panel's ratings, as observed in Table V, the home-laundered skirts of type I fabric looked "better than" and/or "about the same" as the laboratory-laundered skirts in a total of 60 percent of the judging instances. Skirts of type II fabric looked "better than" and/or "about the same" in 79 percent of the cases. Skirts of type III fabric received these ratings 64 percent of the time.

On observing the panel's negative

TABLE V

Comparative appearance ratings in percentages by panel and preteenage subjects of home-laundered and laboratory-laundered skirts after third, fifth, and tenth launderings

Percentage of appearance ratings

Time rated	*Type I*			*Type II*			*Type III*		
	Better	*About the same*	*Worse*	*Better*	*About the same*	*Worse*	*Better*	*About the same*	*Worse*
Panel's ratings									
First party (third laund)	16	36	48	37	43	20	12	44	44
Second party (fifth laund)	0	32	68	11	61	23	30	30	41
Third party (tenth laund)	43	43	14	32	32	16	22	48	30
Average ratings of three parties	22	36	40	29	30	21	22	42	36
		·60·			·79·			·64·	
Preteenage subject's ratings									
First party (third laund)	20	42	38	43	35	23	16	54	30
Second party (fifth laund)	11	43	46	40	44	16	34	30	36
Third party (tenth laund)	32	32	17	29	31	20	37	43	20
Average ratings of three parties	23	46	31	37	42	20	32	43	25
		·69·			·79·			·75·	

ratings (also Table V), it is noted that in 40 percent of the judging instances home-laundered skirts of type I fabric looked "worse than" the laboratory-laundered skirt of the same type. Skirts of type II fabric "looked worse" in 21 percent of the ratings and type III in 36 percent. Because of the large percentage of negative ratings for all three types of fabrics, it appears that factors other than methods of laundering were influencing these negative scores. Such factors may have been the ability of the girl to appear well groomed in any type of garment, her weight, and her general restlessness or placidity. Some support of this conjecture was noted in the raw data. In only one case did the same girl receive "better than" ratings for all three types of fabrics. She was frail in stature, fastidious and calm. Her skirts were washed alone in a pulsating machine. In two other instances, 93 percent of the ratings were in the "looks worse" category. Both of these girls were considerably overweight and of nervous fidgty temperaments. Their skirts were washed in agitator machines. In one case, the skirts were washed alone. In the other, they were processed as part of the regular family wash. Among the skirts that were always washed by hand, a surprising 39 percent were rated as looking worse than the skirts laundered in the laboratory. Obviously many factors other than washing method contributed to the general disciplined or undisciplined appearance of the fabrics under study.

APPEARANCE RATINGS OF HOME-LAUNDERED SKIRTS BY ADULT SUBJECTS——Table VI and Figure 2 show how the adult subjects rated the appearance of the skirts they washed and ironed. Scoring was done on a five-point scale equivalent in meaning to the Cranston scale. Evaluations were based on the type of ironing thought to be needed by each skirt (see procedure). Each of the twenty subjects rated her three skirts after the first, third, fifth and tenth washings. This totals 80 ratings for each of the three types of fabric. The number and percentage of ratings as shown in Table VI indicate that, as the finishing formulation changed from "minimum care" to wrinkle-resistant to no resin, the number of subjects thinking that moisture would be needed in the ironing process increased. The range of number one scores (indicating the need of moisture) is from 35 percent for type I skirts to 71 percent for type III skirts. About one third of type I skirts, about one half of type II, and approximately three fourths

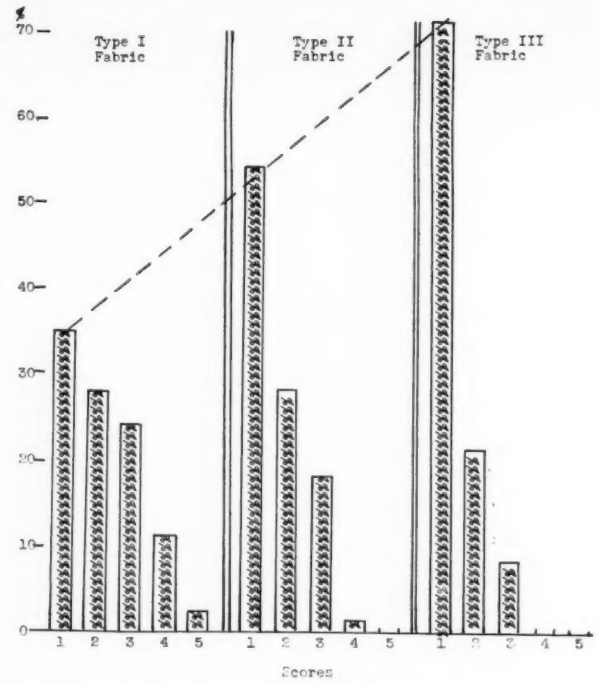

Figure 2
Appearance ratings of home-laundered skirts by adult subjects; scores by percent

of type III skirts rated a score of one when judged by the adult subjects who were responsible for their upkeep.

It may be observed further from Table VI and Figure 2 that, for each skirt type, the score given in the highest percent of instances was one; the score given in the lowest percent of instances was five.

Table VI also indicates that no skirt of type III fabric was ever judged to be wearable without ironing or with just a touch-up pressing (% scores 5, 4). In 99 percent of the instances, skirts of type II were judged as needing at least an all-over light pressing (% score 4). Fabric I skirts were thought to be wearable with no pressing or ironing in only two instances. In both cases, it was reported that these skirts had been line dried in a stiff gale.

As seen by the data in Table VI and Figure 2, there was a high incidence of feeling the need for the use of moisture in ironing the project skirts made from resin-treated percales. This is indicated by the conscious or unconscious rating score of one. In accordance with their evaluations, there was a high incidence of the adult subjects incorporating this feeling of the need for damp ironing into their practices. This was discussed earlier in reference to Table III. It is not known whether this feeling and this practice were due a) to established habit patterns of ironing cotton garments, b) to lack of information relative to the behavior characteristics of resin-treated cottons, c) to lack of not having been convinced that such cottons needed "little or no ironing," or d) to the fact that the skirts under question actually needed sprinkling, steam ironing, or ironing before they were dry to restore them to acceptable appearance.

This controversy raises the unanswerable question: Are consumers

TABLE VI

Appearance ratings of home-laundered skirts by the adult subjects

Fabric	Number and percent of ratings											
	1		2		3		4		5		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
I	28	35	22	28	19	24	9	11	2	2	80	33.3
II	43	54	22	28	14	18	1	1	0	0	80	33.3
III	57	71	17	21	6	8	0	0	0	0	80	33.3

aware of and enjoying the full benefits of easier ironing accomplished in a shorter length of time as provided by resin-treated cottons? The amount and type of ironing needed are important factors that apparently were not recognized by several of the subjects. This lack of recognition is probably characteristic of many besides the sample for this study.

SUMMARY

Three 80-square percales finished by different methods were made into skirts which were worn by 22 preteenage girls for a period of 20 weeks; this included 10 launderings. Two of the percales were resin-finished, one for "minimum-care" and one for wrinkle resistance; the third had only a starch-Sanforized finish.

Twenty sets of three skirts, one from each fabric, were home-laundered according to procedures selected by the individual homemakers caring for their daughter's skirts. Three sets of skirts, two sets worn and one unworn, were laboratory-laundered under controlled conditions.

Routine laboratory analyses were made on the new fabrics and on fabric taken from each of the 69 skirts after one, three, five and 10 launderings.

The control skirts were evaluated for wrinkle recovery after one, three, five and 10 washings, using both the Cranston scale and Monsanto photographs. Home-laundered skirts were evaluated at the same times by the adult subjects using a five-point scale comparable in meaning to the Cranston scale. Home-laundered skirts were rated for general appearance in comparison to the laboratory control skirts by a three-point scale after three, five and 10 launderings. Two pertinent factors of the findings presented in this paper concern wrinkle-recovery and ironing facts as compared to subjective appearance evaluations.

Maximum wrinkle recovery was attained by the laboratory-kept fabrics in approximately two hours after machine washing and tumble drying. Wrinkle-recovery potential decreased as the finishing formulation on the fabrics changed from "minimum-care" to wrinkle-resistant to no resin. Wrinkle-recovery angles of the two resin-treated fabrics decreased with repeated use and launderings. Objectively measured differences in wrinkle-recovery values of the two resin-treated fabrics were not compatible with visual differences as indicated by appearance scores. After laundering, the percale finished for wrinkle resistance showed considerably lower crease-recovery angles than did the "minimum-care" fabric; however, visual differences between the two were not discernable even after 10 launderings.

The amount of time saved in the ironing of resin-treated over non-resin-treated fabrics was highly significant. As the finishing formulation changed from "minimum care" to wrinkle-resistant to no resin treatment, the ironing time increased. A high incidence of using moisture in ironing the two resin-treated percales indicates a lag in consumer practices over manufacturer recommendations.

ACKNOWLEDGMENTS

Sincere appreciation is extended to the twenty-two girls and their mothers for their total and enthusiastic support in providing the basic data for the study.

Special thanks are extended to George S Wham, then chairman of the Wash and Wear Committee of the AATCC, and to E W Lawrence and R H Phillips, director and assistant director, respectively, of the Research and Development Laboratories of Cranston Print Works Company, Cranston, Rhode Island for their interest and cooperation in the project. The study was made possible through the generosity of the Cranston Print Works Company, which provided the specially finished fabrics.

Gratitude is extended to Mrs D D Golden for encouragement and help in constructing the project skirts.

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General Calendar

AMERICAN OIL CHEMISTS SOCIETY
Sept 28-30 (Statler Hotel, Los Angeles, Calif)

AMERICAN TEXTILE MACHINERY ASSOCIATION
May 23-27, 1960 (American Textile Machinery Exhibition, Auditorium, Atlantic City, NJ)

ASSOCIAZIONE COSTRUTTORI ITALIANI DI MACCHINARIO PER L'INDUSTRIA TESSILE
September 12-21 (3rd International Textile Machinery Exhibition, Milan Fair, Milan, Italy)

DRUG, CHEMICAL AND ALLIED TRADES SECTION, NY BOARD OF TRADE
Sept 17-20 (69th Annual Meeting, Sagamore Hotel, Bolton Landing, Lake George, NY)

INSTITUTE OF TEXTILE SCIENCE
Sept 17 (8th Scientific Session, National Research Council, Ottawa, Ontario, Canada)

INTERNATIONAL FEDERATION OF ASSOCIATIONS OF TEXTILE CHEMISTS AND COLOURISTS
Sept 16-18 (London Congress—Church House, Westminster, London, England)

INTER-SOCIETY COLOR COUNCIL
April 11-12, 1960 (29th Annual Meeting—Philadelphia Museum College of Art, Philadelphia, Pa)

NATIONAL COTTON COUNCIL
Oct 7 (Chemical Finishing Conference, Mayflower Hotel, Washington, DC)

SOUTHERN TEXTILE EXPOSITION
Oct 3-7, 1960 (Greenville, SC)

SYNTHETIC ORGANIC CHEMICAL MANUFACTURERS ASSOCIATION OF THE UNITED STATES
Sept 15, Oct 13, Nov 4 (Luncheon meetings at the Hotel Roosevelt, New York, NY); Dec 2 (Annual meeting and dinner—Hotel Roosevelt, New York, NY)

TEXTILE RESEARCH INSTITUTE
March 24-25, 1960 (30th Annual Meeting, Hotel Commodore, New York, NY)

ADDENDUM

In the article, "Why Does the Fluorescence of Optical Bleaches Reach a Limit?", by Eugene Allen, American Cyanamid Co, which appeared in the July 13, 1959 issue, the following acknowledgment was inadvertently omitted:

"The method used in this work for the determination of fluorescence, as well as the auxiliary filter slide needed for the determination, were supplied by Seymour Goldwasser of Lever Brothers Research (private communication)."

CONTINUOUS DEVELOPMENT OF DIRECT, DEVELOPED DYEINGS*

DR R KERN
Sandoz, Ltd
Basle, Switzerland

FOR a continuous dyeing procedure with direct, developed dyes, such as the Diazamines, it is natural that complete fixation of the dyestuff on the fiber is necessary. It would, for instance, be impossible to pad a direct, developed dye and to bring it immediately afterwards into a coupling bath because, in this case, the dyestuff would bleed, and furthermore, the resulting dyeings would not be fast.

Before the coupling, the dyestuff must either be applied according to one of the usual dyeing methods, or after padding, it must be completely fixed by approximately four to five minutes steaming or by treatment in a boiling salt bath for approximately 15-20 minutes or, in the pad-roll procedure, by conditioning during a period of three to five hours, depending on the depth of the dyeing.

After the fixation of the dyestuff, the wet and squeezed material can be impregnated with a sodium nitrite solution, and after a further nip it can be introduced into an acid bath. Thereupon, the excess liquid is again squeezed out and the material shortly rinsed in order to remove acid which is still present. After a further nip, the impregnated goods are introduced into the coupling bath (beta naphthol, diamines, etc) and coupled. Rinsing between the acid and the coupling bath is necessary in order to prevent precipitation of the coupling component by the acid.

In the usual diazotizing procedure, one adds the acid to the nitrite bath because both solutions are cold. Likewise, normally, the solution of the coupling component is added. Because in a continuous dyeing procedure the reaction time must be as short as possible, it is no longer feasible to work with cold solutions. Therefore, the solutions must be warm. On the other hand, by using warm solutions, it is no longer possible to add the acid directly to the nitrite bath because, in this case, the nitrite would be used up too readily, and furthermore, the nitrous gases would be annoying to the workers on the machine. Experiments have shown that, for this reason, the goods must first be treated with a nitrite solution and only afterwards with acid.

TABLE I

%	Dye		Colour Index Designation	Developed with
5	Diazamine	Fast Yellow 3GL	CI Direct Yellow 64	Yellow Developer Z
5	"	Fast Yellow GL Pst	CI Direct Yellow 65	" "
5	"	Orange RS	CI Direct Orange 73	Beta Naphthol
5	"	Fast Orange RL	CI Direct Orange 82	" "
4	"	Fast Scarlet 3GWL Pat	—	" "
6	"	Red RS	CI Direct Red 126	" "
6	"	Red RN	CI Direct Red 125	" "
6	"	Red 3BN	CI Direct Red 140	" "
6	"	Red BN	—	" "
6	"	Bordeaux BS	CI Direct Red 148	" "
4	"	Light Bordeaux 3BWL*	—	" "
5	"	Green BL	CI Direct Green 48	" "
5	"	Green GL	CI Direct Green 52	" "
5	"	Fast Green 2GL	CI Direct Green 51	Yellow Developer Z
5	"	Fast Green GLN	CI Direct Green 51	" "
5	"	Brown 3R	CI Direct Brown 122	Beta Naphthol
5	"	Light Brown 3GL	—	" "
5	"	Light Brown RL	—	" "
5	"	Brown RA	CI Direct Brown 129	" "
4	Chloramine	Brown MR	CI Direct Brown 2	" "
4	Diazamine	Blue GW	CI Direct Blue 130	" "
4	"	Blue G	CI Direct Blue 120 or 121	" "
4	"	Blue BR	CI Direct Blue 120A	" "
4	"	Blue 2R	CI Direct Blue 126	" "
8	"	Black BH Conc 125	CI Direct Blue 2	MTD
8	Chloramine	Black JHR	CI Direct Blue 20	"
8	Diazamine	Black PSP	—	"
8	"	Black N	CI Direct Black 17	"

* Protected by patents in various industrial countries.

TABLE II

%	Dye		Colour Index Designation	Developed with
5	Diazamine	Fast Scarlet RWL Pat	—	Beta Naphthol
4	"	Light Scarlet GLA*	—	" "
4	"	Light Scarlet GL	CI Direct Red 145	" "
4	"	Brilliant Red BR	CI Direct Red 151	" "
4	"	Light Red BWL	CI Direct Red 155	" "
6	"	Light Red 7BLN	CI Direct Red 117	" "
6	"	Light Bordeaux BLN	—	" "
6	"	Light Bordeaux 2BLN	CI Direct Red 127 127A	" "
4	"	Light Bordeaux 2BWL*	CI Direct Red 143	" "
8	"	Black D	CI Direct Black 17	MTD

* Protected by patents in various industrial countries.

Our experiments were conducted as follows:

1) The wet, squeezed material was treated for 30 seconds with a 50°C warm solution of 30 g/l, or 15 seconds with 20 g/l, sodium nitrite and squeezed again.

2) Subsequently, the material was treated for 30 seconds with a 50°C warm hydrochloric acid solution containing 30 g/l, or 15 seconds with 20 g/l, hydrochloric acid.

3) After the acid treatment, the dyed goods were rinsed cold for approximately 15 seconds and squeezed again.

4) Finally, the material was coupled for 30 seconds in a 50°C warm solution of 10 g/l beta naphthol, or 15 seconds, respectively, diamine.

After these operations, the dyeings were finished in the normal manner, that is, lightly soaped, rinsed and dried. Our experiments have shown that, in all cases, 20 g/l sodium nitrite, 20 g l hydrochloric acid and a reaction time of 15 seconds are sufficient.

For long runs, it is natural that it is necessary to keep up the concentration of the various baths by feeding.

In order to determine the degree of development of the dyes, parallel series of experiments were conducted by diazotizing and coupling a piece from the same dyeing in the normal manner. All the tests were subjected to a 60°C wash test.

The dyestuffs listed in Table I, diazotized and developed according to the described continuous method in the indicated depth of shade, gave equivalent dyeings and equal washfastness as when treated by normal diazotizing and coupling methods.

The dyestuffs listed in Table II are a trace poorer in washfastness if diazotized and developed according to the continuous method.

* This article appeared originally in German in *Melliand Textilberichte* **39**, No. 1, 65 (1958).

CHEMICAL MODIFICATION OF COTTON: AMINIZATION COST STUDY

O J McMILLAN JR, K M DECOSSAS, G L DRAKE JR, J D GUTHRIE and E F POLLARD

*Southern Regional Research Laboratory**
New Orleans, La

INTRODUCTION

AN interesting chemical modification of cotton cellulose is the introduction of aminoethyl groups ($-CH_2CH_2NH_2$) into the cellulose molecule. In 1930, processes for this purpose were devised by Hartmann (*5*) using 2-chloroethylamine and other related compounds, with soda cellulose. The soda cellulose was prepared by reacting cellulose with 18% sodium hydroxide in water. These methods involved prolonged procedures and resulted in relatively low degrees of substitution.

In 1947, a more promising process (*4, 9*) for introducing aminoethyl groups into cotton cellulose was developed at the Southern Regional Research Laboratory, where both fabric and raw stock were successfully modified. A cellulose ether is obtained which has about one aminoethyl group per each 14 anhydroglucose units in the cellulose molecule. This degree of substitution is equivalent to a nitrogen value of 0.6% in the aminized cotton product. A simplified equation of this reaction is shown below with the formula of the cellulose molecule abbreviated to show just a single hydroxyl group.

Similar reactions occur at other hydroxyl-groups in the cellulose chain.

$$\text{Cellulose}-OH + \begin{matrix} CH_2\,NH_2 \\ | \\ CH_2\,OSO_3H \end{matrix} + 2NaOH \longrightarrow$$

(*2-Aminoethyl-sulfuric acid*)

$$\text{Cellulose}-OCH_2CH_2NH_2 + Na_2SO_4 + 2H_2O$$

(*Aminoethyl cellulose*)

This introduction of aminoethyl groups into the molecule imparts unique properties to cellulose. Cotton fabric modified by this process has a high affinity for the wool-type acid dyes, whereas ordinary untreated cotton fabric does not readily accept such dyes.

Good anion exchange capacity is imparted to cellulose by the addition of amino groups. A product containing 0.6% nitrogen has an ion-exchange capacity of about *0.5 milliequivalents per gram* (*2*).

* One of the laboratories of the Southern Utilization Research and Development Division, Agricultural Research Service, U S Department of Agriculture.

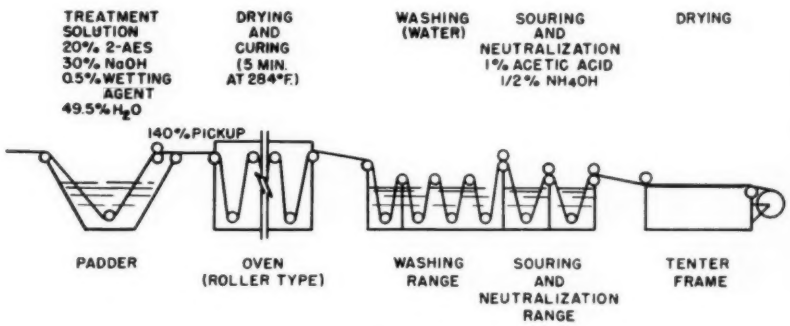

Figure 1

Continuous aminization of cotton fabric

Among the potential applications of aminized cotton is its use as a chemical intermediate for the attachment of other useful substances. The amino group which has displaced an hydroxyl group is more reactive than the latter. This enhanced reactivity of cellulose lends itself to further chemical modification to impart flame resistance (*7*), rot resistance (*10*), water repellency (*11*), and other useful properties to cotton.

In cotton weather- and rot-resistance studies, it has been observed (*8*) that a number of polyhydric phenols and quinones react with aminized cotton. Oxidation-reduction or electron-exchange materials can be made by the reaction of aminized cotton with quinones, nitrosophenols, quinone imines, and quinone oximes. When samples of aminized cotton are treated for 24 hours with excess saturated solutions of pentachloro- and pentabromophenol, weight increases of 6.9% and 3.8%, respectively, are obtained.

Although aminized cotton is not presently in commercial production, its possible use for further chemical reaction may in the future encourage its commercial development.

THE PROCESS

The process, diagrammed in Figure 1, is a relatively simple one of padding an aqueous solution of sodium hydroxide and 2-aminoethylsulfuric acid into the cotton, drying and curing at an elevated temperature, washing the cotton free of unreacted chemicals and byproducts, and then final drying of the product. Conventional textile-processing equipment is well suited to this process. Fabric is padded in a three-roll padder with the treating solution to a wet pickup of about 140%, and is then passed through a roller-type oven with a holding time of five minutes and a temperature of 284° F. The fabric then passes through a continuous washing range where unreacted chemicals and reaction byproducts are removed. To facilitate removal of sodium hydroxide, an acetic acid sour followed by an ammonia neutralization is used in the last two sections of the washing range. Final drying may be done on steam cans or a tenter frame.

The product is similar in appearance to untreated cotton except for a light yellow coloration, which can be overcome by subsequent dyeing. The strength of the product is but slightly less than that of the original untreated cotton (*4*).

COSTS

This cost study was made for the continuous processing of cotton fabric in a hypothetical plant. A fabric processing rate of 50 yards per minute of 52-inch-wide 80 x 80 print cloth (3.1 linear yards per pound) was assumed. Annual production was varied by operation of this plant for one, two, and three shifts for 250 days per year, and for three shifts for 350 days per year.

INVESTMENT COSTS——Plant investment costs are shown in Table I.

Costs of such items as process piping, instrumentation, and outside lines were determined as percentages of installed equipment costs (*1, 2, 3, 12*). Main buildings are of steel frame, concrete and brick at $21.50 per square foot, and warehouse for dry storage was provided at $8.00 per square foot. Engineering and construction costs and contingencies were included in arriving at total plant cost. The small increase in total plant costs for the plant operating at two or more shifts per day is due to larger storage tank requirements for sodium hydroxide and the addition of a second mixing tank to allow for uninterrupted shift operations. Plant investment costs are based on an entirely new plant.

PROCESSING COSTS——

a) *Chemicals.* 2-aminoethylsulfuric acid is currently available at 40¢ per pound, and this price is used in this study. A sodium hydroxide price of $2.90 per 100 pounds (76% Na_2O basis), and a wetting agent price of 25¢ per pound are used.

b) *Labor.* Labor costs are estimated as those applicable to a textile finishing plant, with skilled labor at $2.35 per hour and semiskilled labor at $1.62 per hour. Double time was used for weekend work and a night labor differential of 10 percent was used for second- and third-shift operation.

c) *Total Cost.* In this estimate, total processing cost, as shown in Table II, is the sum of direct, indirect, and fixed processing costs, contingencies, and general expenses. Total cost is calculated without profit and is exclusive of the cost of the cotton fabric. It was determined (Table II) that a product containing 0.6% nitrogen can be produced for 6.7¢ to 9.1¢ per yard of fabric (52-inch-wide 80 x 80 print cloth, 3.1 linear yards per pound). This is equivalent to 20.4¢ to 27.6¢ per pound of product.

It is apparent from Table II that total costs decrease at higher annual productions approaching maximum plant capacity.

TABLE I
Aminization of cotton fabric: Plant Investment Costs

Annual production[1] (1000 yards)	6,000	12,000	18,000	25,200
Annual operation (days)	250	250	250	350
Daily operation (hours)	8	16	24	24
Production rate (linear yds/min)	50	50	50	50
a) Installed equipment	$459,242	$469,742	$469,742	$469,742
b) Process piping (13% of "a")	36,740	37,580	37,580	37,580
c) Instrumentation (2% of "a")	9,185	9,395	9,395	9,395
d) Outside lines (3% of "a")	13,777	14,092	14,092	14,092
e) Auxiliary facilities	40,000	40,000	40,000	40,000
f) Buildings	191,100	191,100	191,100	191,100
g) Total physical plant cost	750,044	761,909	761,909	761,909
h) Engineering and construction (20% of "g")	150,009	152,382	152,382	152,382
i) Contingencies (15% of "g")	112,507	114,286	114,286	114,286
j) Total plant cost	$1,012,560	$1,028,577	$1,028,577	$1,028,577

[1] Annual production was varied by operation of the plant for one, two, and three shifts for 250 days per year, and for three shifts for 350 days per year.

TABLE II
Aminization of cotton fabric: Total costs

Annual production[1] (1000 yards	6,000	12,000	18,000	25,200
Annual operation (days)	250	250	250	350
Daily operation (hours)	8	16	24	24
Direct processing cost	$322,463	$606,376	$889,120	$1,252,508
Chemicals	244,468	488,601	732,209	1,025,093
Labor	17,260	36,245	55,230	99,414
Supervision	1,726	3,625	5,523	9,941
Maintenance	35,440	36,000	36,000	36,000
Plant supplies	5,316	5,400	5,400	5,400
Utilities	18,253	36,505	54,758	76,660
Indirect processing cost	15,190	27,639	40,018	64,290
Payroll overhead	2,848	5,981	9,113	16,403
General plant overhead	8,316	13,606	18,826	30,977
Packaging	4,026	8,052	12,079	16,910
Fixed processing cost	87,601	89,149	89,149	89,149
Insurance	10,126	10,286	10,286	10,286
Property taxes	20,252	20,572	20,572	20,572
Depreciation	57,223	58,291	58,291	58,291
Contingencies	21,263	36,158	50,914	70,297
General expenses	99,266	134,469	168,507	213,480
Gen admn & office overhead	13,396	22,780	32,076	44,287
Financing cost (5% fixed & working capital)	59,078	66,129	72,279	80,619
Sales cost	26,792	45,560	64,152	88,574
Total processing cost	545,783	893,791	1,237,708	1,689,724
Cents per yard untreated cotton	9.1	7.4	6.9	6.7
Cents per pound of product	27.6	22.4	20.9	20.4

[1] Annual production was varied by operation of the plant for one, two, and three shifts for 250 days per year, and for three shifts for 350 days per year.

SUMMARY

Preliminary cost studies for the continuous production of aminized cotton fabric show that this reactive cotton product can be produced in large quantities at a relatively low cost. Annual productions in this hypothetical plant ranged from six million up to 25.2 million yards to simulate commercial-scale processing. These costs would also be applicable to an occasional output of aminized fabric in a textile-finishing plant with similar equipment, where total annual production of all fabric treatments is approximately equal to six million to 25.2 million yards.

Chemicals used in this process are readily available at low costs, and conventional textile equipment is quite suitable for fabric processing. For a product containing 0.6% nitrogen a cost, exclusive of the cost of the fabric and without profit, as low as 20.4¢ per pound of product has been estimated.

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American Association of Textile Chemists and Colorists

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August 24, 1959

COUNCIL REPORT

215th Meeting • May 29, 1959 • Montreal, Canada

COUNCIL, at the invitation of the Quebec Section, Canadian Association of Textile Colourists and Chemists, met at the Sheraton-Mt Royal Hotel, Montreal, Canada, on May 29, 1959.

* * *

In accordance with the recommendations of the newly formed Executive Committee, Council approved the reappointment of George P Paine as executive secretary with the understanding that employment may be terminated upon four months written notice by either party to the other. The duties of the executive secretary, which the Executive Committee recommended to the Council for approval, were as follows:

1) To be responsible for Council and special committee meeting minutes.
2) To record and administer acts, motions and resolutions of the Council.
3) To be an ex-officio member of all Committees of the Council.
4) To supervise and/or to co-operate with special AATCC projects as directed by the Executive Committee.
5) To be the administrative head of the AATCC personnel and installation, subordinate only to the Executive Committee of the AATCC.
6) To be the official liaison officer in dealing with the Lowell Technological Institute.
7) One of his major responsibilities is to maintain through the National Headquarters a continuing program to increase the corporate and individual membership.
8) Another of his responsibilities is to coordinate the activities of the National Headquarters as related to the planning and execution of plans for National Conventions, with emphasis on the sale of exhibit space when required.
9) It may not be possible to foresee all the activities and duties of the executive secretary. It will be the responsibility of the executive secretary to search out those tasks which should command his attention and upon which he should spend his time and efforts for the benefit of the Association. He shall obtain appropriate approvals from the Executive Committee.

The president stated that the Executive Committee had certain responsibilities toward the activities of the executive secretary and from time to time these activities might change, or the Executive Committee, with approval of the Council, might decide that certain activities should be emphasized and other modified. While the duties of the executive secretary were spelled out in the recent amendment to the Bylaws, the foregoing was an elaboration of his responsibilities.

* * *

As secretary for the Olney Medal Committee, George P Paine announced that Emery I Valko has been selected as the Olney Medalist for 1959.

As secretary of the Nominating Committee, Mr Paine announced the following slate of candidates for 1960:

President— W G Helmus

Vice President (New England Region)—J E Lynn, W G Parks

Vice President (Central Atlantic Region)—C T Anderson

Vice President (Southern Region)—A H Gaede

Vice President (Western Region)—J H Jones

* * *

Charles W Dorn, chairman, Executive Committee on Research, reported that ECR had voted to request the National Fire Protection Association to hold its flammability test method from coming to a vote within NFPA and refer it to the American Standards Association in order that all parties at interest could have a voice in the matter. Should NFPA decide to the contrary, ECR would withdraw AATCC's representation on the NFPA Committee.

ECR has discussed the feasibility of making AATCC test methods more effective and useful for end-use purposes, possibly by a description in the test method as to what it meant at the consumer level. ECR is not ready to come forth with a concrete proposal at this time but might bring a recommendation to the Council at its September meeting.

ECR has discussed the policy on technical supplies and confirmed the opinion that these could best be handled by outside sources than the Association itself wherever practical.

The American Standards Association has requested an opinion as to whether AATCC would continue representation on the Sectional Committee on certification procedures. J R Bonnar has served on this committee as AATCC's representative and is in agreement with the opinion of ECR that AATCC should withdraw its representation, the facilities of the AATCC to be available for any technical assistance.

ECR placed in the hands of the Executive Committee a proposal for reciprocal membership between AATCC and similar organizations in the Western hemisphere.

* * *

For the Committee on Corporate Membership, A E Johnson called attention to the executive secretary's financial report, which showed that income from Corporate Membership was ahead of the entire income for Corporate Members last year by

$1,358.32. There were seven firms whose dues had not been paid which totalled $825. The number of Corporate members stood at 294.

Steps had been taken to greatly strengthen the membership extension program. The South Central and the Metropolitan Sections in particular had developed excellent plans on membership promotion.

* * *

Council was advised that petitions have been submitted for the formation of a new Section embracing the northern North Carolina and southern Virginia areas of the Piedmont Section. Following Council's acceptance of the petition, President Helmus appointed the Councilors of the Piedmont Section, with A E Murray acting as secretary, to formalize the boundaries of the new Section for recommendation to the Council and to proceed in accordance with the Bylaws.

* * *

William A Holst, chairman of the Committee on Constitution and Bylaws reported that the proposed constitutional amendment to Article V, Section 4, presented at the April 3, 1959 Council meeting, with J A Komninos as original proponent and intended to place a limitation of two consecutive years on the services of any person as president, had been considered by the Committee. The proposed amendment applied to the second sentence only, the first sentence remaining unchanged. The committee, with the concurrence of the original proponent, recommended for greater clarity a change in wording for the proposed second sentence so that Article V, Section 4 would read as follows:

"The President and each Vice President shall be elected to serve for one year. No person shall serve for more than two years consecutively as President, or for more than three years consecutively as Vice President or as National Councilor."

The Committee recommended that the proposal in that form be approved by Council followed by the usual steps of publication and presentation to membership for vote. A motion that the amendment be approved was adopted.

* * *

For the Committee on Membership and Local Sections, E Morrill, chairman, noted that since the Committee reported to Council on March 27, 1959, 104 applicants had been elected to membership, 96 were restored and eight reinstated, three members were dropped and six members had died. The total elected membership as of May 27, 1959 was 6829, which was 51 below the membership standing on May 1, 1958. Listed in *American Dyestuff Reporter* and awaiting election were 64 applicants. In addition, the Committee had under review 15 applicants for membership.

Mr Morrill noted that the membership since 1953 had remained on a plateau. In an effort to recoup the losses sustained for nonpayment of dues in 1959, a personalized letter, hand-signed by the president, had been sent to 600 former members located in the United States and other countries.

The reinstatement fee had, in a number of cases, discouraged members from rejoining. This had been discussed by the Executive Committee, which had recommended that the problem be turned over to the Committee on Constitution and Bylaws in the possibility that the reinstatement penalty could be eliminated from the Bylaws. The president requested as a temporary measure that the Council authorize the elimination of the $2.00 penalty for a six-months period until the Bylaws could be modified. Council voted to adopt the proposal.

* * *

President Helmus stated that the Executive Committee had reviewed correspondence between the AATCC and the Society of Dyes and Colourists concerning the joint partnership on matters in connection with the cost of the *Colour Index*. Consideration was being given to adjusting the terms of the contract between the two societies.

* * *

Reporting as chairman of the Appropriations Committee, Roland E Derby referred to a meeting of the Committee on May 7 when the proposed budget for the next fiscal year was reviewed. A copy had been circulated to the Councilors. The proposed operating budget for the next fiscal year amounted to $133,683 as against $130,277 for the current year. The Appropriations Committee had unanimously adopted the budget and requested that it be presented to the Council for adoption.

Council approved the budget as submitted as well as the other recommendations of the Appropriations Committee.

* * *

Also approved were motions that Price Waterhouse and Company be reappointed as auditors for the 1959-60 fiscal year, and that Haussermann, Davison and Shattuck be reappointed as general counsel.

* * *

Council voted to thank its Canadian hosts for their kind invitation and hospitality and to instruct the Executive Committee to transmit the Council's expression of gratitude.

* * *

The next meeting of the Council will be held on Friday afternoon, September 11, at the Hotel McAlpin, New York, NY.

International Cooperation Administration

CERTIFICATE OF COOPERATION

This certifies that, under the Program of the International Cooperation Administration of the Government of the United States of America in cooperation with other Governments,

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

has made significant contribution to the achievement of the purposes of this program by furnishing technical assistance to selected representatives of the cooperating countries.

Issued at [illegible]

this 18th day of [illegible] 19[illegible]

Acting Director

The United States Government through the International Cooperation Administration recently presented a certificate to AATCC in recognition of the Association's assistance to technical missions visiting this country. Delegates from the textile industries from several countries have been received by the Association at National Headquarters.

1959 AATCC NATIONAL CONVENTION

October 7, 8, 9, 10 • Hotels Sheraton-Park & Shoreham, Washington, D C

A MESSAGE FROM THE 1959 CONVENTION TOURS COMMITTEE CHAIRMAN

AATCC members who attend the 1959 National Convention should plan to take advantage of the Convention's Washington location and see at least some of the many cultural, historical and scientific points of interest to be found in our Nation's Capital. Facilities for doing so are excellent. Several sightseeing organizations operate in the city and most have modern, comfortable coaches with trained driver-guides to point out places of interest and provide descriptive narrative. One of the larger organizations maintains a booth at both convention hotels. Thus, members can conveniently make arrangements for tours on an individual basis at the time of the convention.

There are many Government and private laboratories in th Washington, DC, area which should be of interest to AATCC members. A partial listing of these would include the Department of Agriculture Laboratories at Beltsville, Md; the Textile Section of the National Bureau of Standards, the National Institute of Drycleaning and Harris Research Laboratories, Inc. Arrangements are being made with these laboratories so that interested members may visit them at the time of the convention.

EDWARD C OLIVA
Chairman
Tours Committee
1959 AATCC Convention

Wives of AATCC members, particularly those who have never visited Washington, are in for a special treat. A highlight of the ladies program is a private, three-hour tour of the city and Arlington National Cemetery. The ladies will board coaches at the Sheraton-Park Hotel, tour the downtown business section and pass many Government buildings, including a drive around and through the grounds of the Capital. They will stop at the Lincoln Memorial before continuing the city tour, this time seeing many of the embassies and legations of foreign nations located in Washington, the homes of former Presidents, Blair House, the White House and the Tidal Basin, which is bordered by the famous Japanese Cherry Blossom Trees.

The ladies will then cross the Memorial Bridge over the Potomac River into Virginia, drive around the statue of Iwo Jima and by the Curtis-Lee Mansion to the Tombs of the Unknowns and witness the very impressive changing of the guard. Returning to the convention hotels, they will pass many other points of cultural and historic interest. The coaches will make a stop in the heart of the downtown business area as a convenience for those ladies choosing to spend the rest of the day shopping.

Your Tours Committee would like to help make your stay in Washington pleasant and edifying by assisting you in planning your touring activities. Please feel free to write us now at Harris Research Laboratories, Inc, 6220 Kansas Ave, NE, Washington 11, DC, or to call upon us at the time of the convention if we can be of help.

EDWARD C OLIVA, Chairman
Tours Committee

THE epicuran delights of the most fastidious gourmets and gourmands attending the 1959 AATCC Convention in Washington, DC, October 7-10 will be satiated, as Anthony M Schwartz of Harris Research Laboratories, Inc, chairman of the Dining Committee, assures convention-goers of excellent meals and a luxurious banquet.

The Olney Medal Award and other presentations will be made at the Awards Luncheon at 12:30 pm on Thursday, October 8.

The Banquet on Friday night at 7:30 promises to be a most unusual affair with a minimum of speeches and with particular emphasis on entertainment, which will be "the best in Washington."

Make your reservations and plans to attend this year's Convention as early as possible.

ANTHONY M SCHWARTZ
Chairman
Dining Committee
1959 AATCC Convention

Membership Applications

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Senior

Louis Leo—Supt prtg, Lancashire Textile Processing Co, New Bedford, Mass. Sponsors: W Thibodeau, R B Simon.

Wilbur S Taylor—Group leader, Vancide Dept, R T Vanderbilt Co Inc, East Norwalk, Conn. Sponsors: R Loveland, O Edelstein.

METROPOLITAN

Senior

Rudolf Berthoud—Field supv, Ciba Co Inc., Fair Lawn, N J. Sponsors: P J Luck, E H Hart.

Mitchell Goldstein—Colorist, Colonial Print Works, Paterson, N J. Sponsors: M G Bruckman, J H Hennessey.

Edward N Manning—Sales mgr, Finishing Div, Pepperell Mfg Co Inc, New York, N Y. Sponsors: R W Price, C B Ray.

DELAWARE VALLEY

Senior

Ruth Kikuta Higuchi—Chemist, Joseph Bancroft & Sons Co, Wilmington, Del. Sponsors: R F Aurich, R S Babiarz.

WASHINGTON

Senior

Charles G Tewksbury—Textile technologist, Harris Research Labs, Washington, D C. Sponsors: J F Krasny, L R Mizell.

PIEDMONT

Senior

Herman P Briar—Project leader, research, Dow Chemical Co, Williamsburg, Va. Sponsors: H W Stiegler, T B Lefferdink.

SOUTHEASTERN

Transfer from Student to Junior

Charles E Gavin—Pilot plant dyer, Avondale Mills Inc, Sylacauga, Ala.

UNCLASSIFIED

Senior

Gerard O Bonenfant—Mgr dyeing & finishing, Gordonshire Knitting Mills Inc, Cayey, Puerto Rico. Sponsors: S Sigel, H J Smaha.

Arnold A Rhomberg—Chief mgr & proprietor of the firm J M Fussenegger, Vorarlberg, Austria. Sponsors: A Spiegel, A Peter.

Associate

William H Kemp—Technical librarian, L B Holliday & Co, Ltd, Huddersfield, England.

Elected Members

No designation after name indicates Senior
(A) indicates Associate
(J) indicates Junior
(S) indicates Student
* indicates transfer from another class of membership

July 29, 1959

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Richard R Kershaw (A)
Myrven W Pannebaker (A)

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W Fred Ziegler

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Tamas Makray
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August 13, 1959

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James R Arthur (A)
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UNCLASSIFIED

Guiseppe Briganti
Jin Woo Rhee
Ibrahim Yuceyar*

AATCC Calendar

COUNCIL, COUNCIL COMMITTEES, RESEARCH COMMITTEES

Sept 10-11 (Hotel McAlpin, New York, NY); Sept 10—Council Committees and Research Committees; Sept 11 (AM)—ECR, TCR; Sept 11 (PM)—Council

NATIONAL CONVENTIONS

Oct 7-10, 1959 (Sheraton Park and Shoreham Hotels, Washington, DC); Oct 6-8, 1960 (Sheraton Hotel, Philadelphia, Pa); September 28-30, 1961 (Buffalo, NY); 1962 (Southern Region)

DELAWARE VALLEY SECTION

Sept 25 (Hotel Abraham Lincoln, Reading, Pa); Oct 23 (Kugler's Restaurant, Philadelphia, Pa); Dec 4 (Philadelphia, Pa)

METROPOLITAN SECTION

Sept 18 (Meeting & field trip, Geigy Chemical Corp, Arsley, NY); Oct 16, Nov 20 (Kohler's Swiss Chalet, Rochelle Park, NJ); Jan 15, Feb 19 (Hotel New Yorker, New York, NY); Mar 18, Apr 22 (Swiss Chalet); May 20 (Ladies Night—Swiss Chalet); June 1960 (Outing)

MID-WEST SECTION

*Nov 7 (Bismarck Hotel, Chicago, Ill)

NIAGARA FRONTIER SECTION

Sept 25 (Niagara Falls, Ont, Canada); Dec 11 (Annual business meeting, Buffalo, NY)

NORTHERN NEW ENGLAND SECTION

Sept 25 (Outing—Wachusett Country Club, West Boylston, Mass); Oct 16 (Lexington Inn, Lexington, Mass); Dec 4 (Joint symposium with ASME Textile Engineering Div, Smith House, Cambridge, Mass); Jan 15 (Woodlawn Golf Club, Newton, Mass)

PIEDMONT SECTION

Sept 25-26 (Barringer Hotel, Charlotte, NC); Jan 22-23 (Poinsett Hotel, Greenville, SC); April 2-3 (Hotel Robert E Lee, Winston-Salem, NC); June 3-4 (Outing—Ocean Forest Hotel, Myrtle Beach, SC); Sept 23-24, 1960 (Hotel Charlotte, Charlotte, NC)

RHODE ISLAND SECTION

Sept 18 (Management Night); Oct 23 (Prov Eng Soc, Providence, RI); Dec 4 (Annual Meeting—Johnson's Hummocks Grille, Providence, RI)

SOUTH CENTRAL SECTION

Sept 19 (Hotel Patten, Chattanooga, Tenn)

SOUTHEASTERN SECTION

Sept 12 (Ida Cason Callaway Gardens, Pine Mtn, Ga); Dec 5 (Atlanta Athletic Club, Atlanta, Ga)

WESTERN NEW ENGLAND SECTION

Sept 25 (Blake's Restaurant, Springfield, Mass); Oct 23 (Annual Meeting—Rapp's Restaurant, Shelton, Conn); Dec 4 (Hartford, Conn)

"THE APPLICATION OF VAT DYES"

Monograph No. 2

American Association of Textile Chemists and Colorists

MONOGRAPH NO. 2, which deals with "The Application of Vat Dyes" was prepared by a board of editors and collaborators in the American Association of Textile Chemists and Colorists. This group represents a complete cross-section of the entire industry so that the text of the Monograph represents information both from laboratory and practical plant standpoints.

The Monograph contains approximately 385 pages with contents of various chapters as follows:

I HISTORY — Natural Indigo and Tyrian Purple; Development of Synthetic Vat Dyestuffs; History of Application of Vat Dyes; The Application of Vat Dyes to Fibers Other Than Cotton.

II PRINCIPLES OF VAT DYE APPLICATION — Types and Forms of Vat Dyes in Commerce; Chemistry of Application; Stripping and Redyeing Faulty Vat Dyeings; Fastness; Print Discharges; Change of Shade in Artificial Light; Dichroic Dyes.

III APPLICATION TO COTTON RAW STOCK — Equipment Used; Methods of Color Application; Typical Examples.

IV APPLICATION TO COTTON SKEINS—Equipment and Methods.

V APPLICATION TO COTTON WARPS—Short Chain Method; Long Chain Warp Dyeing; Continuous Pigment Padding Method.

VI APPLICATION TO COTTON PACKAGES—The Package; Package Dyeing Machines; Chief Factors in Dyeing Packages with Vat Dyestuffs; Dyeing Speed and Levelling Power of Vat Dyes; Dyeing Methods; Oxidation and Finishing; Vat Dyeing on Beams; Illustrative Dyehouse Procedures.

VII APPLICATION TO COTTON PIECE GOODS—History; Jig Methods; Padding Methods; Continuous Methods; Overhead Reel Method; Vat Dyeing of Cotton Narrow Fabrics.

VIII HOSIERY — Application of Colors to Cotton Hosiery; Application of Colors to Mixed-Fiber Hosiery.

IX APPLICATION TO FIBERS OTHER THAN COTTON—Vat Dyeing of Viscose Rayon; Vat Dyeing of Cellulose Acetate; Vat Dyeing of Nylon; Vat Dyeing of Animal Fibers.

X GENERAL PRINCIPLES OF PRINTING — Piece Goods; Forms Other Than Piece Goods.

XI PRINTING — Direct Printing with Vat Dyestuffs; Discharge Printing with Vat Dyestuffs; Goods Dyed After Printing.

XII INDIGO—History and Properties; Various Indigo Vats and their Preparation; Dyeing of Cotton with Indigo; Dyeing of Wool with Indigo; Application of Indigo to Cotton Printing; Indigo Derivatives.

XIII THE USE OF VAT DYES AS PIGMENTS OR IN NONTEXTILE APPLICATIONS — Paper, Rubber, Plastics and Resins; Fireworks; Paints and Lacquers; Resin-Bonded Pigments; Miscellaneous.

XIV LEUCOESTERS OF VAT DYESTUFFS — History and Chemistry; Properties; Application of Leucoesters; Lightfastness of Leucoesters; Relative Cost of Vat and Soluble Vat Dyeing.

XV TABULATION OF VAT DYESTUFFS—Formulae and Properties; Numerical Index; Alphabetical Index; Trade Names of American-Made Vat Dyes.

AUTHOR INDEX

SUBJECT INDEX

From the foregoing, it is seen that this Monograph gives a very comprehensive description of all of the factors involved in the application of vat dyes. In all discussions of application procedure, practical working formulas are given. This publication is of interest to all persons who are either producers or consumers of vat dyes.

The price of "The Application of Vat Dyes" is $5 per copy, postpaid, to members; to nonmembers it is $6 per copy. Quantity discount prices are as follows:

100 Copies	.....	$2.75 each
50 "	.....	3.00 "
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George P Paine, Executive Secretary
American Association of Textile Chemists and Colorists
P O Box 28, Lowell, Massachusetts

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STUDENT CHAPTERS

Alabama Polytechnic Institute, Bradford Durfee College of Technology, Clemson College, Georgia Institute of Technology, Lowell Technological Institute, New Bedford Institute of Technology, North Carolina State College, Philadelphia Textile Institute, Rhode Island School of Design

AUGUST ARPEGGIO
1959

Inter Alia — Inter Nos

P J WOOD

NOT ALWAYS DRY

The term "Drycleaning" is only comparative. As we understand it, the drycleaner has to exercise his own expert judgment as to when he shall 1) wet wash the article sent for drycleaning, when the best work on the particular garment could be accomplished by that procedure; 2) clean in one of the conventional drycleaning solvents, with addition of a minimum quantity of water to allow of the use of one or other of those very efficient surface-active compounds, soluble only in water, that can remove certain types of soil and stain that do not yield readily to volatile solvents alone; 3) dryclean in one of several volatile solvents without any addition at all, the choice of cleaning solvent being made according to the type of textile garment or other household item being handled.

In the most recent issue of the Journal of the Textile Institute (Proceedings) that has come into our hands, there is an account of a meeting of the Leeds Section of the Institute, in the Senior Common Room of the University, devoted to a discussion of the history and procedures of the dyeing and cleaning industry. Chairman, W J Onions Esq of Leeds U.

The origin of the cleaning industry, as related by the lecturer, was said to have been the accidental knocking over of a paraffin lamp by a French tailor, who noted the cleansing effect of the liquid on the table cloth.

Charles Lamb, in one of the "Essays of Elia", tells a story of the origin of roast pork, you may remember, in which some Chinese children accidentally set fire to the rather flimsy ancestral home, constructed chiefly of paper, when playing with matches in the absence of their parents. The adjoining pig sty, also, no doubt, made of the same inflammable (somebody corrected us the other day, telling us that the up-to-date word is now "flammable", we think it was P J Fynn, our part namesake) material, was not spared in the conflagration.

The family pig, probably not only an automatic garbage disposal, but a familiar friend to the children, lay immobile in the ashes. To determine if he were still alive, one of the children touched him on his well-roasted back, still liberally supplied with BTU's; insertion of the burnt finger in the mouth, a natural reaction, revealed the luscious taste and flavor of roast pig.

The Chinese authorities came into the picture when it became a common thing for others to burn down their dwellings, with attached pig house in order to prepare the newly discovered succulent dish.

We are wondering if the French tailor discovered a more direct route to drycleaning operations than the Chinese did to roast pig?

Today, the speaker pointed out, the use of several types of solvent is current. This removes most of the stains and grease, but food stains have to be removed by a second operation, after the cleaning, usually with a steam gun.

The lecturer, E J Davies, B Sc, M Sc, who is director of research of the Dyers' and Cleaners' Research Organization, gives an interesting comparison between garment cleaning habits of the Englishman and the American. He says that the average British subject has one and one-half suits cleaned per annum; in America the rate is seven suits per head and still expanding.

Is the difference due to carelessness on the part of the American or carefulness on the part of the Britisher, or what?

Our own theory is that, for every one and one-half days of fine weather in England, there are seven days in America. On the wet days — who cares, hence the difference. Scotland must be wetter yet — we have a keen recollection of a walking tour, up one side of Scotland and down the other, during which we got wet and dried up again, almost daily, and sometimes several times a day. Ireland isn't what one would call dry, either. We remember playing hockey in the rain. Nothing is ever postponed on that account.

BUT, the compensation lies in the fact that, in all these countries, one never sees the grass sere and yellow, or burnt to a crisp, all is green and flourishing. The dividend is paid in a profusion of wild flowers, such as that gleaming carpet of primroses we discovered at Crosshaven on the other side of what used to be called Queenstown Harbor (now Cobh) one day early in May.

CHANGE

Change is not always bad, neither is it always good. In a recent editorial in the Wisconsin Journal of Education occurs the sentiment, "Fear of change is always a brake on progress".

Where a change is necessary, as determined by sober, down-to-earth deliberation, and due consideration of all the consequences involved in making the change, change there should be; but it should be remembered that all change is not necessarily progress.

Doesn't it seem, sometimes, that among our younger citizens there are those who lose sight of this fact and urge change simply for the sake of change?

Before any change at all is made, would it not be prudent to examine the performance of the present arrangement thoroughly to find out if its workings are or are not running as well as can reasonably be expected?

Said some wise man . . . "The best security is through intelligent change". But let us make sure that it is intelligent. Wasn't it George Bernard Shaw who said that if man were allowed to live for 300 years, the dread of death would disappear because we would be longing for a change?

Robert Moses sums up the matter right neatly; in Management Review he is quoted thus: "Have no fear of change as such and, on the other hand, no liking for it merely for its own sake".

INVESTIGATING

While we were looking up a certain subject in several encyclopedias, we came across the name of Aesop, a name that has held our interest ever since our paternal progenitor suggested that the name of his mother's family, Jessop, might have had its origin in the name of the world-renowned story teller.

After consulting several authorities, we have come to the conclusion that Aesop might well have never existed, in spite of the evidence of Herodotus, that equally well-known Greek historian, who reported that Aesop was a slave owned by a certain rich man, Iadmon, who lived on the isle of Samos, one of the components of the Greek archipelago.

This could well be, as slavery never seemed to have much influence in preventing the slave from attaining distinction, as witness the case of Epictetus who, many centuries later, served as a prolific source of quotations for the late Mayor Gaynor, who cited him on any and every occasion. Epictetus was born a slave, you may recollect, and came to Rome quite young, probably transferred thither by some enterprising slave dealer to his commercial profit. And Epictetus didn't do so badly either, as we understand he was able, in spite of the handicap of slavery and lameness, to acquire an education. Writing evidently was one of the subjects omitted from his curriculum, as we are told that he never wrote anything himself; and if it hadn't been for his student, Arrian, who kept copious notes of E's discourses on Stoic texts, neither Mayor Gaynor nor the world would have known one thing about Epictetus. Arrian wrote the "Enchiridion," a handbook setting forth the views of Epictetus, mostly a doctrine of ethics based on religious faith.

But to get back to Aesop. He must have been begged, borrowed, or stolen from Iadmon, for we find him later being sent to Delphi on a mission by Croesus—he of the many shekels, we suppose—where he met death.

He lived in the 6th century BC, so it is difficult to trace him after the lapse of all these years. Now there are people who would say that, every time a new and worthwhile afterdinner or bedtime story appeared, it was one of Aesop's. If he did spend any time on this planet, it is difficult to believe that he did not receive inspiration for some of his tales from previous spinners of yarns (nontextile, that is).

Evidence pointing to this conclusion appears to be presented by the similarity of some of his stories to those occurring in the "Panchatantra," a Sanskrit book of fables that seems to have been put together in the period 300-500 AD. Some of these episodes appear to be based on one of the Buddhist sacred books, the "Jataka," which was written in Pali. This is said to be one of the oldest books of the sort.

Joe Miller undoubtedly drew heavily on all these sources in compiling his "1001 Jokes." Imagine Joe Miller knowing Sanskrit, Pali and Greek!—Q. E. F.

Abstracts

Cellulose and Formaldehyde

Marsh, J T, *J Soc Dyers Col* **75**, 244-52, May, 1959

The author presents a survey of the various researches on the cellulose-formaldehyde reaction during the last half-century.

Over 50 years ago, Eschalier patented a process for the strengthening of regenerated cellulose fibers by treatment with formaldehyde. The process was very difficult to control and never was commercially successful.

In 1919 the Tootal Broadhurst Lee Co found that a treatment of cotton with acidified formaldehyde solution, followed by heating, gave a product with very good crease-recovery, but this was accompanied by such severe embrittlement and reduced tensile strength as to be commercially valueless. The crease-resisting effect on rayon also was accompanied by severe damage.

From various specifications, the author points out, it is quite clear that the reactivity of rayon with formaldehyde is greater than that of cotton, and that the degradation of cotton by formaldehyde is greater than that of rayon.

The author describes a series of experiments on both cotton and spun rayon fabrics when padded with a 20% solution of formaldehyde, generally at pH 1.7, and heated for five mins at 150°C. Above pH 1.7 the amount of combined formaldehyde was progressively reduced. The catalyst employed was tartaric acid. Graphs are included, showing the effect of this treatment on the crease recovery, tensile strength, extension at break and abrasion resistance of both fibers; also the reduction in water-imbibition of rayon staple when treated both with formaldehyde and with urea-formaldehyde.

The crease recovery, with both fibers, reached a maximum of about 35-36 mm. Rayon required about twice as much combined formaldehyde as cotton to reach the maximum.

The wet breaking strength of rayon was found to rise rapidly, remain fairly constant, and then fall again, as the percent of combined formaldehyde was increased. On the contrary, the dry breaking strength of rayon was continuously reduced, as well as that of cotton also.

The author, in his summary, states that, although it is possible to obtain good crease recovery by forming the methylene ether of cotton or rayon, this is accompanied by such a degree of degradation that the goods are unmerchantable; antishrink finishes have, however, been produced with rayon on a commercial scale, sometimes utilizing various polymeric additives in an attempt to reduce degradation, as with the processes of American Viscose Corp and Dan River Mills.

There are 33 references to journal articles and patent specifications.

Emulsion Thickening—Possibilities in Textile Printing

Dawson, T L, *Dyer* **121**, 625-6, April 10, 1959

The author first discusses and compares oil-in-water and water-in-oil emulsions, and concludes that oil-in-water emulsions are technically preferable, but on the other hand the oil-in-water emulsions are economically more attractive because of the lower consumption of hydrocarbon oil.

He lists the general advantages arising from the use of emulsion thickenings as follows:

1) Printing is possible from a thickening of very low solids content even under conditions where conventional thickenings of high solids content would normally be necessary. From 35 to 65 percent of an emulsion print paste consists of the hydrocarbon oil, while the gum solids content may be as low as 0.3 percent.

2) As a consequence of their low solids content and the volatile nature of the oil phase, emulsion thickenings dry rapidly when printed on the fabric.

3) Fabrics printed with emulsion thickenings are very much softer after drying than are those to which a conventional print paste has been applied. In this condition they are much less liable to creasing and/or to marking-off during aging.

4) The residual solids remaining on the printed fabric after the dye has been fixed are more readily removed by washing, since the film-forming material is present in very much lower concentrations than when normal thickenings are used.

5) After washing and drying, the absence of a residual thickening film often results in brighter prints. The soft hand of washed prints ensures a very even pick-up of resin and avoids the necessity of giving a malting or other enzymic treatment to prints prior to resin finishing.

6) The emulsion thickening generally penetrates less deeply into the fabric than many conventional thickenings, thus giving a higher visual color yield.

The author states that, in machine printing, it has been found that more level prints are obtained if rollers having fairly shallow engravings (0.1-0.15 mm) are used, and the prints are given a light crush. This is particularly the case where a blotch pattern is being printed.

Procion (fiber-reactive) dyes printed with an emulsion thickening are said to show an increase in color yield, compared with conventional methods, and are more easily washed off.

Vat dyes give a sharp printed mark and high color yields, and in some cases increased brightness.

Emulsion thickenings have a special advantage for Brentogen (azoic) dyes, permitting them to be printed alongside pigment colors, the author said. He also mentioned the advantages of the emulsion method for printing on synthetic fibers (nylon, Terylene, secondary acetate and triacetate).

Recommendations are made of suitable film-forming compounds and emulsifying agents for each class of dye.

Sizing Materials and How They are Removed

Campbell, K S, *Textile World* **109**, 82-3, June, 1959

The sizing of cotton warps is a necessary operation to a weaver, but the size content of fabrics is a nuisance to the finisher. Except in the case of a few styles of loom-finished goods, the finisher must remove as much of the sizing material as possible if his operations are to be successful. The size content of cotton fabrics will vary between 10 and 20 percent.

Sizing formulas are usually based on a film-former, such as starch from corn, potatoes, tapioca, or sago flour. The starches are sometimes modified by treatment with enzymes, with acid, and with hypochlorite, in order to give different working properties, notably lower viscosities in solution. Other film-formers are occasionally used (eg, locust bean gum, various cellulose derivatives, and polyvinyl alchohol).

The starch films may be softened by tallow, vegetable oils, sulfated fat-

ty alcohols, etc. Glycerin is often added as a humectant, as well as small amounts of fungicides.

To remove the size from the warps, several methods may be used. All of them serve to hydrolyze the starch, splitting it into its simpler molecular building blocks such as dextrins and sugars that are soluble and easily washed out of the goods.

Steeping of the fabric in dilute sulfuric acid is one desizing method that has been used for many years. This treatment at room temperature will remove two-thirds of the starch present in two hours without damaging the cellulose, it is said. Hydrochloric acid may also be used, and has the advantage of forming soluble salts with any calcium compounds present. This acid treatment is sometimes employed as a first step, followed by a treatment with enzymes.

Some mills find that a dilute caustic soda steep for several hours or overnight on some types of fabric (eg, print cloth) removes enough size so that satisfactory kier scouring and bleaching may be obtained. This method also softens the motes and permits somewhat shortened scouring times.

What's New in Knitted Outerwear?

Reichman, C, Papers AATT, *Modern Textiles* 40, 65-8, June, 1959

The synthetic fibers are today the major raw materials of the knitted outerwear industry. Although the industry was at one time an important consumer of wool and cotton, at least one of these materials, wool, has diminished considerably in importance, and cotton is rapidly losing its proportionate share of the knitted outerwear market.

With respect to sweaters, Orlon acrylic fiber accounts for roughly 45% of the industry's consumption of all fibers. Nylon in the form of textured filament yarn is probably next in importance, representing about 25%. Wool and various hair fibers account for another 25%.

In the manufacture of napped and sheared interlock sweaters, a new idea in sweater fabric texture, single 30s yarns of three-denier variable-length Orlon processed by the Turbo stapler appear to be best suited. Among the features of these garments is a reduced tendency to pilling.

Another Orlon development is the application of the Du Pont Taslan texturizing procedure to spun Turbo-processed high-bulk yarns, designed primarily for brushed-surface sweaters. When made from the new textured Type 82 Orlon, the sweaters possess an unusual silk-like hand and appearance.

Combinations of a filament yarn with a spun yarn have aroused some interest among outerwear knitters. In one of these treatments, a variable percentage of plied wool is combined with Ban-Lon, the Ban-Lon forming the core of the yarn bundle and the wool the outer wrapping.

Outerwear knitters today are viewing wool-content yarns more closely than ever before, the author states, but their interest is mostly confined to certain special regional wools (eg, Icelandic wool) and lamb's wool. They are using more of the specialty hair fibers, ie, mohair and alpaca. With the brushed-surface fabrics gaining in popularity, mohair is making a strong comeback, since it lends itself to raising a hairy surface.

In the manufacture of knitted elasticized fabrics for swimwear, knitters use various spun synthetics in combination with natural rubber, and also make even greater use of the stretch filament yarns, particularly Helanca.

The author describes in detail some of the latest developments in knitting machinery, as revealed at the Knitting Arts Exhibition at Atlantic City in May.

Development of Chlorine Bleaching

Higgins, S H, *Dyer* 121, 31-2, Jan 2, 1959

The introduction of chlorine as a whitening agent for cellulosic fibers, says the author, formed a new era in the bleaching industry. Hitherto all the actual bleaching had been done by the sun's rays, and as the output of the textile industry increased, bleachers required more and more land for "grassing" (as sun-bleaching was called). "All around the Bay of Larne the fields were covered with white cloth."

The introduction of chlorine did not immediately do away with grassing, however; the author states that the older method was still carried out in France in quite recent times.

Scheele discovered chlorine and noticed its bleaching powers. Berthollet showed the bleaching effect, in 1786, to James Watt, who introduced the process into the bleachfield of his father-in-law, in the neighborhood of Glasgow. Bleachers in Aberdeen adopted the method in 1787. The cloth had to be exposed to the action of the chlorine gas in a closed receiver, with appliances for submerging the cloth in water and raising it, thus exposing it to the alternate action of the gas and water, for it was found that chlorine did not act on the cloth in the dry state.

Berthollet found that by employing a strong solution of chlorine water he made the cotton tender, so he reduced the strength and grassed for a short time.

In 1790 it was found that chlorine could be combined with a solution of pearl ashes, and in that state could be conveniently applied in bleaching. This was an entirely different bleaching liquid, and it had a powerful effect on the coloring matter of flax. "Eau de Javelle" was prepared at Javelle, near Paris, by absorbing chlorine in a water solution of potash.

Attempts were next made to absorb the chlorine gas in lime, and soon this method of bleaching was extensively used in Northern Ireland. A bleaching liquor made by the action of chlorine on lime suspended in water was patented by Tennant. This process was used by a number of Lancashire bleachers.

A process for the manufacture of solid bleaching powder by the action of chlorine on slaked lime was patented by Tennant in 1799.

A great deal of trouble was experienced in applying chlorine to the bleaching of linen, the author states, and bleaching "inside" was not quickly achieved; in fact, some grassing was still carried out 100 years after the dates of Tennant's patents.

As a result of the production, during World War I, of large quantities of liquid chlorine (for gas warfare), the bleachers were able to obtain it after the war and to make their own bleaching liquor from lime and liquid chlorine, thus avoiding the necessity of making the chlorine gas themselves.

(The author does not mention sodium hypochlorite, a still later development, which by now has largely displaced calcium hypochlorite.)

THE AATCC CONVENTION NUMBER WILL BE PUBLISHED SEPTEMBER 21

• PATENT DIGEST •

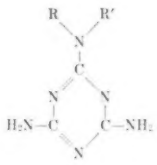
PAUL WENGRAF

SHRINK-RESISTANT CELLULOSIC TEXTILES———Combination of N-N-disubstituted melamines with other bases, condensed with formaldehyde G,2,04

USPat 2,833,674 (Rohm & Haas—Hurwitz—May 6, 1958)

The preamble to this patent stresses the drawback of chlorine retention when condensates of the melamine-formaldehyde, urea-formaldehyde, etc types are applied. Combinations of melamine-formaldehyde condensate with dimethylol ethylene urea, advocated in USPat 2,690,404 (see references below) reportedly do not reduce significantly the discoloration or the loss in tensile strength of the thus-treated fabrics.

The current method, which is said to cause only a slight tendency towards yellowing and a very low loss of strength, calls for the use of N-N-disubstituted melamines of the general formula



wherein R and R′ are allyl, hydroxyethyl or alkyls of one to three C atoms.

However, the polymethylol compounds of these substances, termed "Component B", are sparingly soluble and expensive. For these reasons they have to be combined with condensates of melamine-formaldehyde, urea-formaldehyde, N-N′-ethylene urea-formaldehyde, etc, which subsequently are referred to as "Component A". For most purposes, it is preferable to use from 20-50 mol % of "B" and 50-80 mol % of "A". The aqueous solution may contain 2-12% of the combined solids for cotton and 5-20% for rayon.

Examples of "Component B" are the polymethylol compounds of N-N-dimethylmelamine and many others of this group (col 2, lines 40-45). The combined components "A" and "B" are cured by acid catalysts, such as ammonium salts or amines (col 3, lines 38-48). Fabrics impregnated with these solutions plus the catalyst are dried and cured at 220-450°F. A time of 30 seconds at 400°F was found to be quite practical.

Example: A bleached cotton fabric was impregnated with a solution containing 6.3% trimethylol-N-N-dimethylmelamine ("B"), 1.25% dimethylol-N-N′-ethylene urea ("A"), and 1% ammonium chloride, following which it was dried at 240°F and cured for 10 minutes at 300°F. Parallel experiments have been carried out with varying amounts of "B". A table (col 5, lines 1-12) shows that shrink resistance and crease recovery results are improved when increased amounts of "B" are used, while brown discoloration and extreme loss of fiber strength are observed when "B" is omitted.

Among the references cited by the Patent Office:

USPat 2,197,357 (Ciba/1940) describes the reactions of aminotriazines, such as melamine, formoguanidine, etc, with aldehydes and resin formation by heat to obtain textile impregnating agents.

USPat 2,690,404 (Dan River Mills/1954): cotton textiles may be rendered wrinkle-resistant by applying polymethylolmelamines combined with dimethylol ethyleneurea plus a heat-activated acid catalyst, neutralizing the alkaline solutions before curing, and baking at 280-360°F. [Cf *Am Dyestuff Reptr 45*, 148 (1956)].

USPat 2,785,092 (Ciba/1957): softening textiles by incorporating condensates of polyalkylene polyamines (or their water-soluble salts) higher fatty acids and acrylonitrile, methacrylonitrile or acrylic acid amides.

COLORING TEXTILES WITH PIGMENTS fixed with acid colloid melamine resins plus nonionics C,4,07

USPat 2,852,479 (Am Cyanamid Co——Bender, Turner——Sept 16, 1958)

Themosetting-resin finishes may render fibers brittle and sometimes impair their tensile strength. Thermoplastic resins, on the other hand, are unable to diffuse through the outer wall of the fibers and have the disadvantage of causing undesirable stiffness and weight increase. It is known that thermosetting resins applied in the form of an acid colloid give crease resistance and stability while not substantially decreasing tensile strength. However, it has not been possible hitherto to use the acid colloid resins in pigment compositions because the dispersions break down with precipitation of the resin.

The problem of preparing a stable dispersion of an acid colloid resin containing a pigment of any kind reportedly has been solved by adding a nonionic surfactant to the resin. Condensates of ethylene oxide with higher alcohols or alkylphenols, partial esters of hexitol anhydride (sorbitan monooleate), and polyesters of fatty acids have the effect of preventing the breakdown of the pigmented composition. Condensates of dimeric (eg, soy bean) fatty acids, described in Am Cyanamid's U S Pat 2,606,199 (1952), are particularly preferred as nonionics.

Example: A pigment dispersion prepared by stirring iron oxide red pigment (F_2O_3) with an equal amount of p-hexadecylphenol condensed with ethylene oxide, was added at a ratio of approx 1:10 to a 10% acetic acid colloid of trimethyl trimethylolmelamine. A stable liquor resulted which could be padded on cotton or wool textiles and followed up by drying and curing.

Thus the application of any resin finish of the above type used for creaseproofing, shrinkproofing, stabilizing, and so on, can be combined in the same step with pigment dyeing. Ten examples of suitable organic and inorganic pigments are given.

Among the references cited by the Patent Office:

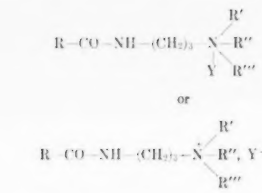
U S Pat (Am Cyanamid/1949): stable emulsions of thermosetting or thermoplastic resins, eg, a butylated melamine-formaldehyde resin, are obtained by the use of a high-molecular-weight ester of a dimerized fatty acid with a polyalkylene oxide as an emulsifying agent.

U S Pat 2,609,307 (Am Cyanamid/1952) protects a method for the shrinkproofing of wool by a treatment with (noncolored) acid amino triazine resin colloids. [Cf *Am Dyestuff Reptr 42*, 215 (1953)].

ANTISTATIC TREATMENT ——— Quaternary ammonium compounds substituted by fatty acid amidoalkanes and alkeneoxy groups G,1

USPat 2,836,517 (Am Cyanamid—Gruber, van Loo Jr——May 27, 1958)

The current patent protects the application of certain ammonium compounds represented by the formulas:



(I)

or

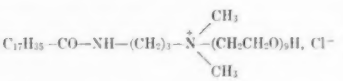
(II)

in which R stands for high hydrocarbon chains, R′ for alkene oxygroups, R″ for lower alkyl groups (one to five C atoms), R‴ for H or lower alkyls, and Y for an anion. Antistatic treatments for textile materials as well as for molding compositions, sheets, films, and the like are within the scope of the patented method. According to col 2, line 52 to col 3, line 17, the products used in treatments of all kinds of textiles correspond principally to formula I.

Illustrative examples of R are heptyl, octyl, and so on; for R′, hexaethene oxy or heptapropene oxy groups; and for Y, halide, sulfate and many other acid ions (see col 1, line 56 to col 2, line 6).

Nitrogenous compounds of this type reportedly offer softening and lubricating action on textiles while imparting durably antistatic effects. They reportedly prove to be substantive to certain fibers, eg, polyacrylonitrile fibers, even under conditions of application at or near the boil.

Example (#9): The quaternary ammonium compound gamma-stearamidopropyl-dimethyl-nonaethenoxy-ammonium chloride



was applied in concentrations of 0.1 up to 5.0% solids content to "AMA" fibers, which are described as copolymers of 90-95% acrylonitrile and 5-10% methylacrylate. Antistatic ratings, obtained before and after one and five launderings respectively (Table I, col 13, lines 18-34), demonstrate the durability of the effects obtained.

Among the references cited by the Patent Office:

USPat 2,589,674 (Am Cyanamid/1952): aliphatic acid-amidopropyl-substituted quaternary ammonium salts, eg, stearamidopropyl dimethyl-beta hydroxyalkyl ammonium chloride, are described as wetting agents, rewetting agents and stripping assistants.

USPat 2,626,876 (Am Cyanamid/1953) calls for the use of alkylamidopropyl substituted quaternary ammonium salts, eg, stearamidopropyl-dimethyl-beta hydroxyethyl ammonium phosphate, as antistatic agents.

HYDROPHOBING OF TEXTILES ———Aluminum salts of lower and higher aliphatic acids applied G,2,02

USPat 2,838,422 (Farbwerke Hoechst——Orthner, Reuter——June 10, 1958)

The preamble to this patent refers to U S Pat 2,469,041, which covers a process for hydrophobing with organic solutions of tribasic aluminum salts of soap-forming acids. This method, it is claimed, produces only an insufficient water-repellent effect.

The current process is characterized by the use of tribasic aluminum salts of mixed organic acids with an optional addition of other known hydrophobic substances of high molecular weight, such as paraffin hydrocarbons, ceresin, chlorinated paraffins, and the like, followed by a thermal aftertreatment.

The mixed organic acid component consists of lower aliphatic (formic, acetic) acids and of practically nonvolatile, higher organic acids of a minimum 250° C boiling point. Examples of the latter are higher aliphatic acids (col 2, lines 5-18), aromatic acids (col 2, lines 19-27), heterocyclic carboxylic acids (col 2, lines 28-36), organic sulfinic or sulfonic acids, and esters and amides thereof. The proportion of the lower acids to the nonvolatile acids is 2-2.5 mols to 1-0.5 mols per Al atom.

Instead of using preformed tribasic Al salts of the mixed acids, one may also use mixtures of the acids with aluminum alcoholates (aluminum methylate or aluminum ethylate) or those alcoholates in which Al atoms are partly linked in chain fashion by O atoms, eg, as in $Al_2(OC_2H_5)_4O$.

Organic solutions of the Al salts are applied to textiles by customary equipment for drycleaning. The residual solvent is removed by blowing off with moist air; then the goods are subjected to a heat treatment, preferably at 100-150°C. The process is said to be especially suitable for the impregnation of garments immediately after drycleaning.

Example: The impregnating liquid contains aluminum monostearate diacetate plus paraffin wax in C Cl_4 or solvent benzene. The impregnated fabric was squeezed to a wet pick-up of 120%, and then air dried. The water-repellent effect reportedly is good; it can be improved by heating the goods at 120°C for 30 minutes.

References cited by the Patent Office:

U S Pat 2,599,553 (California Res Corp/1952): complex aluminum salts of oleophilic organic acids, such as aluminum stearate-azelate, aluminum benzoate, etc, are used in greases as demulsifiers and in some instances as waterproofing and fungicide agents.

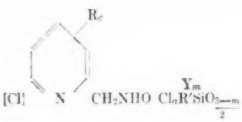
Brit Pat 401,712 (I G Farben AG/1933) covers emulsions of soaps and water-soluble aluminum salts containing reaction products of insoluble organic compounds, eg, higher fatty alcohols or acids with high amounts of ethylene oxide, as nonwetting protective colloids (and thus also acting as emulsifiers).

HYDROPHOBING OF TEXTILES with amidomethyl quaternary ammonium siloxanes G,2,02

USPat 2,838,423 (Dow Corning Corp——Gilkey——June 10, 1958)

According to the preamble to this patent, organopolysiloxanes, which are widely used as water repellents, are especially efficient for treating synthetic fibers and wool. However, the effect was found to be nondurable on cellulosic fabrics, particularly when they are laundered at approx 160°F. Launder-resistant polysiloxane finishes would, therefore, be most desirable.

A solution to this problem reportedly has been found with the application of quaternary amidomethyl siloxanes of the general formula

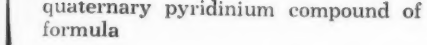


wherein R stands for hydrocarbons of less than 4 C (methyl, ethyl vinyl, etc); c is 0-3; a is 1 or 2; R′ is a di- or trivalent hydrocarbon, such as ethylene; Y is a monovalent, optionally fluorinated hydrocarbon; and m is 0-2. Thus the quaternary complex is formed from pyridine or derivatives thereof. These novel polysiloxanes, which form viscous water-soluble compounds, were found to be resistant to laundering when applied to cellulosic fibers; they may also serve as fixing agents in admixture with conventional organopolysiloxanes.

The patented method also refers to copolymers of the above formula with any siloxane in which the substituents are monovalent, optionally fluorinated hydrocarbons, dimethylsiloxane or trifluoromethyl siloxane. If the amount of quaternary amidomethyl siloxanes is at least 30% of the copolymer, the composition is usually water-soluble; otherwise, the copolymers have to be applied from emulsions or solvent solutions.

Example: A copolymer of 32.2 mol % dimethylsiloxane and 67.8% of the

quaternary pyridinium compound of formula



was dissolved at a ratio 3:41 in water. Cotton which was impregnated with this solution, dried and heated for 90 sec to 350° F had a spray-rating of 100, and after five launderings at 160°F still had a rating of 70. A parallel sample, impregnated with a commercial siloxane water repellent, had its spray rating drop to zero after the first laundering.

References cited by the Patent Office:

U S Pat 2,637,623 (Deering Milliken Res/1953): quaternary ammonium (pyridinium) compounds substituted by high chains and reacted with organosilicones are used to render textiles water repellent, and also crease resistant upon subsequent hydrolysis.

U S Pat 2,723,987 (Dow Corning/1955) describes the preparation of organosilicones which can be chemically combined with various resins, especially alkyd resins. No Si-O-C linkages, which render the product unstable, are formed.

WET-CREASE-RESISTANT TEXTILES ——— Polysiloxane oils combined with formaldehyde precondensates G,2,02

USPat 2,839,429 (Total Broadhurst Lee Co——Marsh et al——June 17, 1958)

The customary finish obtained with crystalline intermediate formaldehyde condensation products renders fabrics crease resistant in the dry state, but not under wet conditions. The current patent protects a method designed to impart wet and dry crease-resistant effects at the same time.

It has been found that this can be done by insolubilizing a synthetic resin within the material and at the same time rendering a polysiloxane oil infusible therein. This effect is surprising, since polysiloxane-impregnated fabrics, once wetted, lose their water-repellent properties, and thereupon absorb just as much water as fabrics that contain no organosiloxanes. Therefore it is unexpected that the tendency to crease in the wet state might be any different by the combining of the creaseproofing resins with polysiloxanes. This specification stresses the practical value of a reduction in creasing during laundering or in an atmosphere of high humidity.

A) Polysiloxane oils, ie, polysiloxanes of an oily rather than a tacky consistency, having a mean molecular weight of 1000 and a viscosity of 10-20 stokes at 25°C are preferred. These oily products spread uniformly over the fibers and exhibit high flexibility after curing in contrast to tacky "silicone varnishes," which turn hard and brittle.

B) The crystalloid intermediate condensates may be obtained from urea, melamine, or phenol and formaldehyde. The usual latent catalysts, particularly ammonium salts, are added.

Components A and B may be applied in separate steps, but it is preferable to impregnate with both components at the same time and to subject the material to a single heating (col 5, lines 60-65).

A useful improvement in wet-crease-resistance may be obtained with 2-15% owf of the cured polysiloxanes. The weight of Components A & B deposited on the fabrics and cured must not exceed approx 32%. A textile material impregnated with the composition should be dried and cured for five to 20 (preferably 10-15) minutes at 140-200°C (preferably 150-160°C).

Example: Component A was made by mixing glacial acetic acid and trimethylbenzylammonium chloride with methyl hydrogen siloxane (mw 1000) in a high-speed stirrer, adding a catalytic amount of calcium stearate dissolved in xylene, and homogenizing.

Component B was prepared by refluxing urea, formaldehyde and ammonia, cooling, and adding a dilute tartaric acid solution.

A and B were dispersed in water. A cotton fabric was padded in this liquid, dried, and cured at 160°C for 10 minutes. The ratio of the cured components A:B in the fabrics was 3:1; the content of B was 14.5% owf.

Among the references cited by the Patent Office:

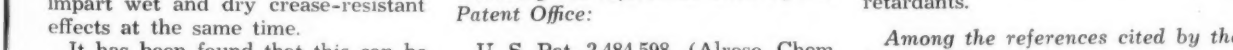
U S Pat 2,484,598 (Alrose Chem Co/1949): improving the crease resistance of cellulosic textiles by treating them with a urea-formaldehyde (or melamine-formaldehyde) precondensate in the absence of acids, and curing the resin in acid steam. [Cf *Am Dyestuff Reptr 39*, 97 (1950)].

U S Pat 2,612,482 (Gen Electric/1952): rendering fabrics water-repellent by applying a composition consisting of a urea- or melamine-formaldehyde condensate and organopolysiloxanes. [Cf *Am Dyestuff Reptr 42*, 231 (1953)].

FLAMEPROOFING with polymerized alkenyl cyanomethane phosphonates G.2,03

USPat 2,841,507 (Victor Chem Works——Costello Jr et al——July 1, 1958)

A copending application states that dialkenyl phosphites react with acrylonitriles to give monomers according to the following equation:



wherein R stands for an allyl or methallyl group. When this monomer is dissolved in beta-beta'-dichloro ethylether, following which a polymerization catalyst such as benzoylperoxide is added and the mixture heated, the viscosity increases until approx 30-40% of the monomer is polymerized.

This partial polymer is separated and cooled for use in the impregnating solution, eg, in a mixture of ethanol and ethylene dichloride. The solid content on partial polymer is between 25 and 50%. A fabric is treated for a few minutes to allow good penetration, wrung out, and cured at 100°C for approx 30 minutes. The goods so treated meet the specifications of the Vertical Flame Resistance Test described in General Specifications Test Method CCC-T-191 a or b (Method No. 5902). (See col 2, lines 18-37, of the current patent).

In addition to the method of application from solvents, the monomer may also be dispersed in aqueous polyvinylalcohol, transformed by slowly adding the catalyst until the desired degree of polymerization is reached, and applied direct in the form of a partially polymerized emulsion.

The degree of polymerization of the monomer in a solvent is controlled by viscosity measurement. If desired, any remaining unsaturation can be reduced by the addition of bromine to obtain partially brominated products which also are efficient flame retardants.

Among the references cited by the Patent Office:

U S Pat 2.714.000 (Victor Chem Wks/1955) describes the preparation of diallyl monochloromethanephosphonate monomers or polymers to make fabrics flame resistant, the effect of which is said to be persistent even after repeated washing.

U S Pat 2,780,616 (Eastman Kodak/1957): polymers of dialkyl-2-cyanopropane-3-phosphonates may be used to prepare filaments or sheets, and also to render paper or textiles flame resistant.

HYDROPHOBING WITH SILICONES ——— Stannous salts as curing agents G,2,02

USPat 2,854,424 (Gen Electric——Solomon, Ashby——Sept 30, 1958)

The preamble refers to U S Pats

2,595,890-1, 2,590,812 and 2,491,843, which cover methods for hydrophobing with predominant methylhydrogen polysiloxanes. These are said to impart a spray-rating of 100 to textiles, and the rating reportedly remains high even after repeated drycleanings. Zinc octoate had been employed in these cases as a catalyst. However, it had been observed that, in mixtures (about 1:1) of the methylhydrogen polysiloxanes with other methylpolysiloxanes free of Si-bonded H and containing zinc octoate as catalyst, the spray-rating soon dropped below 100, and after two to four drycleanings, even below 70. The use of mixtures of this type seems to be especially desirable, because the supply of starting material for the methylhydrogen polysiloxanes, ie, methylhydrogen-hydrolizable silane, is inadequate to meet the demand at present.

It has been discovered that blends of the above type may have a spray-rating of 100, which remains persistent after eight to 10 drycleanings, when the zinc octoate catalyst is replaced by stannous octoate, oleate, or naphthenate. The two latter salts are preferred to the stannous octoate because the bath-life increased four to five times.

Example: Equal parts of methylhydrogen polysiloxane and methylpolysiloxane were blended (col 5, lines 29-30) and emulsified with Ethomid RO/15 (amide of red oil) to form the "master emulsion". The stannous oleate catalyst was separately emulsified and blended with oleic acid. Samples were impregnated in a textile-treating bath, which contained 20 pbw of the "master emulsion" (35% silicone solids) and 22 pbw stannous oleate (or octoate) emulsion, dried at 150°C, and cured. The results showed that the stannous catalyst-containing finish was superior to parallel emulsions containing zinc octoate catalysts with regard to durability of the spray-rating after several drycleaning cycles.

Among the references cited by the Patent office:

U S Pat 2,612,482 (Gen Electric/1952) describes a process for rendering textiles water-repellent with a mixture of urea-(melamine-) formaldehyde condensates, a liquid organo polysiloxane, and a liquid hydrolysis product of a methyl dihalogen silane. [Cf *Am Dyestuff Reptr 42*, 231 (1953)].

U S Pat 2,750,305 (Deering, Milliken /1956) describes the manufacture of an ammoniacal emulsion of a silicone resin for hydrophobing; the catalyst is preferably a stannous hydroxide, formed by the addition of stannous salt to ammonia. [Cf *Am Dyestuff Reptr 46*, 222 (1957)].

PEROXIDE BLEACHING OF COTTON ——— Pretreatment with a wetting agent plus molecularly dehydrated phosphates B,2

USPat 2,858,183 (Du Pont——Potter——Oct 28, 1958)

Continuous bleaching processes using H_2O_2 solutions call for a pretreatment with desizing agents and steaming in caustic soda carried out in a J box. The bleaching process proper is effected in another J box at temperatures between 200 and 212°F.

The current invention aims to avoid the disadvantages inherent in the use of two separate J boxes, eg, increased costs and higher investments, by eliminating the J box used in the preparatory operation. This step is replaced by one in which the goods are immersed in solutions of molecularly dehydrated salts of phosphoric acid, eg, sodium hexametaphosphate, plus anionic, cationic or nonionic surfactants, such as alkoxylated aryl polyether alcohols, sodium alkylsulfates, and so on. Generally, the concentration of the above phosphates plus surfactants is within 0.1-1.0 (preferably 0.3-0.5) % of the bath.

The goods wetted out with the combined solution are thoroughly rinsed with water at 120-180°F, then immersed in a peroxide solution at a temperature raised to 160-212°F by steaming, and finally stored for 30-90 minutes in an insulated J box.

Example: Gray cotton samples were immersed at 140°F for three minutes in a solution of 0.5% of sodium hexametaphosphate and 0.5% of a surfactant; thoroughly rinsed with water; squeezed; immersed in a bleach solution of 1.05% H_2O_2, 3% sodium silicate, and 0.5% NaOH; squeezed to a pickup of 100%; and finally heated for one hour to 210-212°F with evaporation being prevented. A table reports on the brightness of samples pretreated in this process with different surfactants. While the resulting figures, which were determined by a Hunter reflectometer, were almost of the same range regardless of the nature of the surfactant, the brightness of a sample pretreated with Duponol ME in absence of hexametaphosphate showed a definitely lower reflectance value.

Among the references cited:

U S Pat 2,231,426 (Becco/1941): bleaching of cellulosic fabrics in a two-step treatment with alkaline peroxide baths of lower and higher liquid ratio.

U S Pat 2,231,426 (Becco 1941): Co/1949) covers a method in which a cotton gray cloth containing predyed threads is impregnated (ex #11) with an aqueous solution of pH 11—11.5 containing sodium silicate, trisodium phosphate, and a detergent. [Cf *Am Dyestuff Reptr 38*, 660 (1949)].

BLEACHING WITH ALKALINE PEROXIDE ——— Formamidine sulfinate pretreatment B,2

USPat 2,860,944 (Du Pont——Young——Nov 18, 1958)

The present invention attempts to provide for better bleaching effects, such as increased brightness, better adsorbency, mote removal and relatively little degradation, in a shorter time than usual. The patent applies to all kinds of vegetable fibers.

The above effects reportedly are obtained when raw goods are extracted with an alkaline solution of formamidine sulfinic acid (thiourea dioxide) and then bleached with alkaline peroxide. Formamidine sulfinate appears to reduce and solubilize the color bodies that occur in raw vegetable fibers. It has been observed that a substantial part of the color bodies can be removed in this treatment with the result that the extracted, cleaner fibers are more readily bleached by alkaline H_2O_2.

Example: Unbleached cotton muslin was wetted with a solution containing some Duponol ME and sodium pyrophosphate. Then two samples were extracted within one, two, four, or eight minutes, one with 3% NaOH only, and the other with 3% NaOH containing 0.2% of the sodium salt of formamidine sulfinic acid. Both samples were further bleached under identical conditions with an alkaline peroxide solution containing sodium silicate. The specimens extracted with the latter solution exhibited greater reflectance (thus better bleaching effects) than those extracted with NaOH only (col 1, lines 57-73). Also the fluidity of cuprammonium solutions of the bleached goods was lower than usual, indicating less degradation.

U S Pat 2,861,009 of Nov 18, 1958 covers a new process for preparing formamidine sulfinic acid by reacting ozone gas with thiourea. This was recently assigned by Frank and Kennerly to Am Cyanamid Co.

Among the references cited by the Patent Office:

U S Pat 2,206,535 (Du Pont/1940) describes a process for stripping vat dyes or azo dyes by formamidine sulfinic acid alkali salts at or near the boiling point.

U S Pat 2,685,496 (Harris Research Labs/1954): colors are stripped from keratinous material by a treatment at 60° C and a pH above 7 with a reducing agent for keratin. (Among the agents is formamidine sulfinic acid). [Cf *Am Dyestuff Reptr 44*, 670 (1955)].

News of the Trade

Third International Textile Machinery Exhibition

Final preparations are being made for the Third International Textile Machinery Exhibition, which will be held in Milan, Italy, Sept 12-21. The Exhibition, which includes all fields of textile manufacturing, promises to be the largest affair of its kind with more than 600,000 sq ft of rented space and better than 625 exhibitors showing textile machinery from all over the world.

Twenty-six American firms will exhibit. Of special interest to those in the wet-processing field will be the exhibits of Proctor & Schwartz, Inc, Philadelphia, Pa, which will display impregnation, drying, tentering and curing equipment for anticrease finishing; the new Artos screen-printing machine, system Stoffel; and two types of Artos printing-steaming units; and that of the Curlator Corp, E Rochester, NY, which will display its Model 49-B Rando Feeder and Rando-Webber.

The following exhibits of European manufacturers will be of special interest to those in the finishing field:

Austria—Reisinger Rudolf, Zimmers' Erben KG.

Belgium — Callebaut-de Blicquy Ets, Julien (Louis) Ateliers, Metalar SPRL, Raxhon Ateliers SA.

Denmark—Henriksen Vald.

England—S Pegg & Son Ltd; Thomas Bolton & Sons Ltd; Hunt & Moscrop Ltd; Mather & Platt Ltd, Sir James Farmer Norton & Co Ltd, Petrie & McNaught Ltd, The Longclose Engineering Co Ltd, Tomlinsons (Rochdale) Ltd.

Germany — Artos - Maschinenbau (Proctor & Schwartz's German affiliate), Eugen Bellmann, Bentler-Werke AG, Combitex GmbH, Deutsche Steinzeugwarenfabrik, Kurt Ehemann GmbH, Peter Wolf Eisenwerk, Elektro-Stahlbau, Erhardt & Leimer OHG, Eumag KG, Famatex GmbH, Fleissner & Sohn, H Hechtenberg KG, L Ph Hemmer GmbH, Heinz Hergert, Hergeth KG, Severin Heusch, Industrie-Companie Kleinewefers, Jagri GmbH, Kettling & Braun, Joh Kleinwefers Sohne (Unionmatex), H Krantz (Combitex), H Krantz Sohne (Combitex), Lindauer Dornier GmbH, Mab Rheydt GmbH, Dr-Ing Heinz Mahlo, Maschinenfabrik Arbach, Maschinenfabrik Briem-Hengler, Maschinenfabrik Friedrich Hass GmbH (Combitex), Maschinenfabriken Tillm Gerber Sohne, Johannes Menschner (Combitex), Karl Menzel, G W Mettenheimer & Co KG, A Monforts (Unionmatex), Franz Muller (Combitex), Novakust-Geratebau, Obermaier & Cie, Osnabrucker Kupfer- und Drahtwerk, Gebr Poensgen GmbH, Karl Rabofsky GmbH, Dr Ramisch & Co (Combitex), Wilhelm Schiffers, Benno Schilde Maschinenbau AG, J Schlenter & Cie, Textilmaschinen Eduard Kusters, Rudolph Then GmbH, B Thies (Unionmatex), Lebrecht Tigges KG, Josef Timmer, Trockentechnik Kurt Bruckner KG, A & E Ungricht, Vits-Elektro GmbH, Zangs Carl AG (Combitex).

Italy—A e Bi, Aerotechnica Marelli, "ALEA" Lombarda Essiccatoi Autom, Arioli & C, "ATI" Termotecnica It, Bercherini Francesco, Bellini Loris & C, Bigagli S & C, Clerici Alfredo, Comerio Ercole, Comerio Rudolfo, Comi Construzioni Meccaniche, Crosta Mario, De Bernardi Fratelli, "Elettrotex" di Conti, Giachino GG & C, "ILMA" Lav Metalli Antiacidi, "Isotex," Jucker, Lamperti Officina Meccanica, Meccanic Automation Texil, Meccanotessile—Fontana & Lanfranconi, Metalmeccanica, Mezzera Costr Mecc, Minnetti Officine, Megri Cav C & C, Noseda Salvatore, "OBEM", Off Biellese Ellettromecc, "OCTIR," "OLMI" Lav Metalli Inossidabili, "Omez" di Zaniboni, Pozzi Leopoldo, Pozzi Luigi, Raimondi Luigi, Reggiani Meccanotex, Romagnoli Giuseppe, Siai-Lerici, "SICAT" Costr Aerotermiche, "SMIT," Sperotto Giuseppe, Termorid, Zanon Ettere.

Netherlands—Stork & Co, Tattersall & Holdsworth, NV Timmerije.

Switzerland—Benninger AG, Fritz Buser SA, Drytester GmbH, Frauchiger (Hans), Jaeggli (Jakob) & Cie, Kerag, Maag (Gebr) Machinenfabrik AG, Peter (Konrad) AG, Scholl AG, Steinemann (Ulrich) AG, Stutz & Cie, Vollenwider (Sam) AG.

Also exhibiting will be firms from France, Denmark, Spain and Sweden.

All dyeing and finishing machinery, accessories, and complementary machinery will be housed in a single building, comprising 15,000 sq meters of floor space.

Special admission tickets are available and may be obtained in this country by writing to Gunther Frankl, Ernest L Frankl Associates, 515 Madison Ave, New York 22, NY.

Direct air flights are available from New York to Milan via Italian Air Lines. Round-trip fares are $916.20 first class; $561.60 economy class.

Dye Sales Up, Production Down for '58

According to the U S Tariff Commission's preliminary report on U S production and sales of dyes in 1958, U S production of dyes was off for the fourth consecutive year; however, sales in 1958 were slightly higher than in 1957.

The report, ninth in a series on production and sales of synthetic organic chemicals in 1958, gives preliminary statistics for 323 individual dyes, and totals by chemical class and by class of application, using the new *Colour Index* classification and terminology.

According to the report, U S production of dyes in 1958 amounted to 140 million pounds—two percent less than the 143 million pounds produced in 1957 and eight percent less than the 152 million pounds produced in 1956. Sales of dyes in 1958 amounted to 139 million pounds, valued at $177 million, compared with 127 million pounds, valued at $164 million, in 1957. Sales of dyes in 1958 were thus nine percent larger than in 1957, in terms of quantity, and eight percent larger, in terms of value.

For many important low- and medium-priced dyes, for which statistics are given in the report, production was smaller in 1958 than in 1957. In 1958 the output of CI Vat Blue 1 was 7.8 million pounds, or four percent less than the 8.1 million pounds reported in 1957; that of CI Direct Black 38 was 4.7 million pounds, or 10 percent less than the 5.2 million pounds reported in 1957. A smaller output in 1958, compared with 1957, was reported also for CI Vat Green 9 (43 percent smaller); CI Vat Black 25 (29 percent); CI Acid Black 1 (17 percent); CI Vat Green 1 (16 percent); CI Mordant Black 17 (14 percent); and CI Mordant Black 11 (13 percent).

On the other hand, production of a number of important dyes was larger in 1958 than in 1957. A greater output in 1958, compared with 1957, was reported for CI Vat Blue 6 (39 percent larger); CI Vat Yellow 2 (37 percent); CI Direct Black 80 (18 percent); CI Vat Brown 3 (13 percent); and CI Basic Violet 1 (five percent).

Although the revision of the *Colour Index* has resulted in a number of changes in the classification of dyes, the differences resulting from these changes are small, in most instances, so that comparisons between the class totals for 1958 and those for former

years are still significant.

With respect to dyes grouped by class of application, four classes of dyes accounted for more than 70 percent of the output of all dyes in 1958: Vat dyes accounted for 30 percent of the total output; sulfur dyes, for 18 percent; direct dyes, for 15 percent; and acid dyes, for eight percent. In 1958 the output of sulfur dyes was 14 percent greater than in 1957 and that of acid dyes, three percent greater. The output of vat dyes was slightly smaller in 1958 than in 1957, whereas the output of direct dyes was 24 percent smaller. This marked reduction in the production of direct dyes is due in large part to the transfer of many direct dyes to other use classifications.

Significant changes were also reported in 1958 for a number of the smaller classes of dyes. Production of azoic dyes and their components in that year totaled 8.8 million pounds, or seven percent more than the 8.2 million pounds reported in 1957. The output of all the azoic groups was greater in 1958 than in 1957; that of azoic compositions was 12 percent larger; of azoic salts, 11 percent; of azoic coupling components, seven percent; and of azoic bases, six percent. In 1958 the output of food, drug, and cosmetic dyes totaled 1.9 million pounds, or one percent less than that in 1957. In the Commission's preliminary report for 1958 statistics are given for the first time on total production and sales of fluorescent brightening agents. The output of these compounds in 1958 totaled 5.9 million pounds; sales amounted to 5.5 million pounds, valued at $13.3 million.

In 1958 four chemical classes of dyes accounted for more than three-fourths of all the dyes produced: Azo dyes accounted for 29 percent of the total; anthraquinone dyes, for 22 percent; sulfur dyes (not including vat sulfur dyes), for 18 percent; and indigoid dyes, for seven percent. Except for the azo dyes—production of which was 20 percent smaller in 1958 than in 1957—the output of the remaining three classes was greater in 1958 than in 1957. The output of both sulfur dyes (except vat sulfur dyes) and anthraquinone dyes was 14 percent larger in 1958 than in 1957, and that of indigoid dyes was three percent greater. The greatly reduced output of azo dyes is attributable in larger part to revisions in the chemical classifications of these dyes.

The statistics on production and sales of dyes in the Commission's preliminary report on dyes are virtually complete. Complete statistics will be given in the Commission's final report on production and sales of synthetic organic chemicals in 1958, which will be issued later this year.

Copies of the preliminary report on production and sales of dyes in 1958 may be obtained by writing to the U S Tariff Commission, Washington 25, D C.

American Dyestuff Reporter readers may also be interested in obtaining the Tariff Commission's preliminary report on U S production and sales of surface-active agents in 1958. The report, seventh in a series on production and sales of synthetic organic chemicals in 1958, gives preliminary statisics for that year on surface-active agents, grouped by chemical classes. All statistics are given in terms of 100-percent content of active ingredients.

According to the report, U S production of surface-active agents in 1958 amounted to 1,335 million pounds —10.7 percent more than the 1957 output of 1,206 million pounds. Sales in 1958 amounted to 1,200 million pounds, valued at $235 million, compared with 1,123 million pounds, valued at $217 million, in 1957.

In this preliminary report, data on production and sales of each of the four ionic classes of surface-active agents are shown for the first time. The output of anionic materials in 1958 amounted to 977 million pounds, or 73 percent of the total production of surface-active agents; sales were 899 million pounds, valued at $148 million. Production of nonionic materials in 1958 totaled 329 million pounds; sales amounted to about 273 million pounds, valued at about $71 million. The output of cationic materials in 1958 amounted to 27 million pounds, and that of amphoteric materials, to two million pounds. Sales of cationic materials in 1958 totaled 26 million pounds, valued at about $15 million; sales of amphoteric materials amounted to two million pounds, valued at $1 million.

Production of cyclic surface-active agents in 1958 totaled 836 million pounds—7.9 percent more than the 775 million pounds reported for 1957. Sales of cyclic surface-active agents in 1958 were about 764 million pounds, valued at $125 million, compared with 741 million pounds, valued at about $119 million, in 1957. The dodecylbenzene sulfonic acid type of surface-active agent was the most important product in this class.

The output of cyclic surface-active agents in 1958 amounted to 499 million pounds—about 15.8 percent more than the 431 million pounds reported for 1957. The sulfated and sulfonated acyclic compounds accounted for almost half of this output; the alcohols and esters were the most important individual products. Sales of acyclic surface-active agents in 1958 amounted to 436 million pounds, valued at $110 million.

The statistics on production and sales of surface-active agents in the Commission's preliminary report are more than 95 percent complete. Complete statistics will be given in the Commission's final report on production and sales of synthetic organic chemicals in 1958, which will be issued later this year.

Creslan Exhibit

Fall apparel and home furnishings fashions containing American Cyanamid Company's new Creslan acrylic fiber are previewed in a special exhibit which opened last month in the company's exhibit hall in New York's Rockefeller Center.

The firm's admission-free exhibit is one of a number of popular tourist attractions in the Rockefeller Center area. It includes animated displays, film and slide presentations and narrated push-button exhibits of many of the company's 6,000 products.

The exhibit emphasizes the depth, richness and permanence of color which reportedly can be achieved with Creslan, claimed to be the most readily dyeable of acrylic fibers. Other alleged properties of the new fiber highlighted in exhibit fashions are its warm, luxurious hand, its resilience and dimensional stability; its lightweight comfort, and its advantages in easy-care, "wash-and-wear" applications.

Featured in the exhibit are men's rainwear, women's suits, jackets, dresses and knit handbags, children's outerwear, high-pile throw rugs and over-the-counter fabrics.

Exhibit merchandise includes fabrics of 100 percent Creslan, and Creslan fiber in blends with wool, cotton and rayon. As part of the program, the company's exhibit hall hostesses are clothed in dresses made from a new lightweight, wrinkle-resistant Creslan/cotton fabric.

The exhibit also stresses the intensive Cyanamid research program which resulted in Creslan. The company is a pioneer producer of acrylonitrile, basic raw material of the acrylic fibers.

The Cyanamid fiber is being marketed under a marketing program which limits use of the Creslan trademark to products which meet established quality and performance standards. Under this plan, the company says, Creslan will reach the consumer only in approved products.

Cyanamid's exhibit hall, located in the RCA building at 49 West 49th Street, is open daily from 11 am until 9 pm.

• NEW PRODUCTS AND DEVELOPMENTS •

Aston AP

A new, antistatic agent has been developed by the Onyx Oil & Chemical Co, Jersey City, NJ.

Called Aston AP, this cationic polyamine antistatic agent is said to afford efficient nondurable protection against static charge formation and, at the same time, provide a soft, drapy hand on fabrics. Aston AP is 100% active, and reportedly exhibits ease of solubility in water, together with a wide range of organic solvents.

Samples, commercial quantities, and technical data are available from Onyx upon request.

Cyanamid Announces Improvements in Jade Green and Two Brown Vat Dyes

Improvements in the brightness of its jade green vat dye and in the printabilty and resistance to migration of two of its brown vat dyes are claimed by American Cyanamid Company.

The improved jade green product, known as Calcoloid Jade Green NC Supra Double Paste, reportedly provides clarity, full-hued purity, high tinctorial strength and all-around good fastness in extra bright shades. Said to be unique in its ability to dye a wide variety of fibers easily, this vat dye reportedly produces good unions on cotton and viscose.

According to Cyanamid, Calcoloid Jade Green NC is easy to apply at elevated temperatures on all types of dyeing equipment, producing good color yield under all dyeing conditions. To obtain bright green shades in prints, Cyanamid recommends its improved Calcosol Jade Green NP Supra Double Paste.

In actual mill production, it is claimed, higher and more uniform strength prints were obtained with Calcoloid Brown RRP Paste, an improved brown vat for printing under most aging conditions. Both flash aging and conventional steam aging reportedly produced true shade and full strength.

The second improved brown vat, Calcoloid Brown GL Double Paste, is said to be resistant to migration during drying of pigment-padded cloth, while giving dyeings with excellent surface appearance and uniformity by the pad-steam method.

The improved vat dyes are thin, nonsettling pastes of a controlled particle size. They are also said to be nondrying and nonspecking.

Stabilized Liquid Sulfur Trioxide

Liquid sulfur trioxide featuring a newly developed stabilizer has been added to the list of sulfation and sulfonation agents offered by Du Pont's Industrial and Biochemicals Department. With this addition, Du Pont is now offering a complete line of chemicals in this category, including sulfuric acid, oleum, chlorosulfonic acid, and sulfamic acid.

It has been recognized that properly stabilized liquid sulfur trioxide could offer potential economic advantages in lower purchase and freight costs per pound of active ingredient. Incorporated in the Du Pont product is a newly developed stabilizer that reportedly provides additional handling tolerance by maintaining the sulfur trioxide in its low melting form. If solidification does take place, the stabilized sulfur trioxide can be remelted at about room temperature, it is claimed.

Coupled with lower initial cost, liquid sulfur trioxide also is said to offer distinct advantages in eliminating spent acid separation and disposal problems. In addition, faster reaction rates and increased yields are often possible, it is claimed.

Primary uses of the product are said to be in the synthesis of high-strength surface-active agents, dye intermediates, insecticide emulsifiers, and lubricating oil additives, where compounds with higher molecular weights can be sulfonated to produce desirable oil soluble sulfonates.

This new product is now available in drums, tank trucks, and tank cars from Du Pont's plant at Grasselli, NJ.

A booklet outlining proper methods of using sulfur trioxide and emphasizing the cardinal points in successful handling is available from any of Du Pont's Industrial and Biochemicals Department sales offices or by writing to: Industrial and Biochemicals Dept, D 4012-A, E I duPont de Nemours & Co, Inc, Wilmington 98, Del.

Experimental Latex X-2726

Development of a new vinyl copolymer latex that is said to have exceptional heat and light stability has been announced by The Dow Chemical Company.

Designated Experimental Latex X-2726, the material is designed to be of use in many textile coating applications.

According to Dow development chemists, performance tests in specific conventional exposures have shown the heat stability of the new material to be 50 percent better than the best commercial vinyl chloride-type latexes previously available. Exposures of Experimental Latex X-2726 in a Fade-Ometer reportedly have shown improved light stability by a 20-30 percent margin.

In adition, the new latex is reported by Dow to have broad compatibility with plasticizers and other film-forming latexes, and may be fused at lower heat than competitive unplasticized latexes.

Among the applications for which Experimental Latex X-2726 reportedly shows promise are coatings for shade cloth, wallboard, rubber, book fabrics, foldable table coverings, fabric wall coverings, and in linoleum wear layers.

Additional information is available through The Dow Chemical Company, Coatings Technical Service, Midland, Mich.

Colloidal Silica Applied to Cotton during Picking

Monsanto Chemical Company has announced the development of a new method for applying colloidal silica to cotton fibers at the time of mechanical picking of the cotton.

Monsanto's colloidal silica, a product of the Inorganic Chemicals Division, is sold under the Monsanto trademark, Syton DS, and is a dispersion of colloidal silica particles in water.

Application of the material to cotton fibers, particularly short fibers, is said to upgrade the cotton and result in a number of advantages in the mill, eg, increased yarn strength, stronger rovings, better abrasion resistance for knitted fabrics and an increase in mill production efficiency.

Syton DS previously has been applied at the textile mill by means of special equipment. The new method of applying reportedly requires no special equipment. The product is mixed with the water that is normally used to aid in the operation of the spindles on the mechanical picker, which is equipped with a tank for this purpose. Amounts applied reportedly vary from less than four pounds to 10 pounds per bale. Application of the colloidal silica in this manner does not interfere with ginning operations, it is claimed.

Sterox 21-K

Monsanto Chemical Company has announced that Texize Chemicals, Inc, Greenville, SC, has been licensed to manufacture Sterox 21-K, a product used in the textile industry for the fulling and scouring of wool and wool blends, for which Monsanto has applied for a patent.

Texize Chemicals, Inc will also distribute the new material, Monsanto said.

Sterox 21-K is a newly developed product which, it is claimed, reduces chemical raw material costs, processing time and handling problems in textile mills. It also promotes uniform shrinkage and high tensile strength in fibers, Monsanto said.

Texize also will distribute Monsanto's complete line of surfactants for the textile industry.

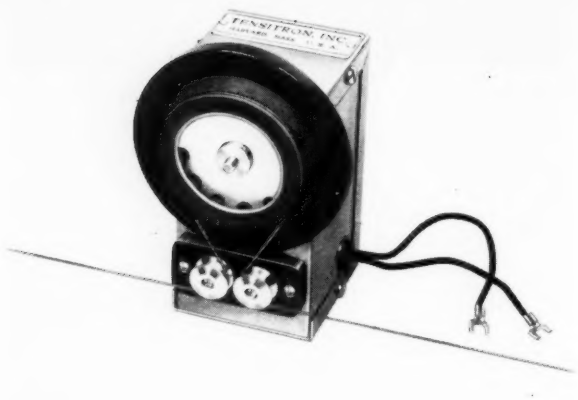
Improved Tensitron

Deviating from prior tensioning of heavier textile yarns, such as monofilaments, glass yarns and cordage, a new model Tensitron guides the filamentous materials around an expendable elastic cover. (See illustration). It is reported that, without abrading sensitive filaments, nonslip traction is established between filamentous material and the elastic pulley. Serrations in its groove are said to improve nonslip action between filament and expendable cover. The unit is made by Tensitron, Inc, Harvard, Mass.

The expendable, lightweight cover consists of two layers of contrasting colors. The outer one is black, the inner one is yellow. When the traction surface wears, the lower yellow layer shows, making it apparent that "retiring" is then necessary.

The cover is the essential element of construction that converts longitudinal motion of the wire into rotary action of a wheel. The pulley is made of aluminum with the tabs and runing surface self-supported so as to give the pulley maximum strength with a minimum of weight and inertia. This wheel is then restrained axially by an electric drag device without frictional contacts. There are no wear or brake surfaces that require replacing other than the expendable cover.

This new method of applying tension electrically is claimed to give practically infinite lifetime of the rotary braking device. Because it is electrically operated, the tension control can be energized from a small control box within any reasonable distance from the tension wheel, which in turn can be mounted upon the traverse of a coil winding machine or put in proper position against such surfaces where processing occurs. The electrical controls can be energized from the same electric switches which control the motor of a coil winding machine or equivalent processing unit. When the whole machine is stopped the tension control stops automatically.



Tensitron

Basosoft Softeners

Putnam Chemical Corp, Beacon, NY, distributors for Badische Anilin & Soda-Fabrik AG, Ludwigshafen a Rhein, Germany, is now offering for sale in this country the line of Basosoft softening agents manufactured by BASF abroad. One of the products, Basosoft SG 100% also offers good antistatic properties.

Each of the products is highly concentrated, and, it is stated, only small quantities are necessary to obtain the required effects. They reportedly have no tendency to yellow white materials, provided overdrying is avoided, or to change delicate shades.

Basosoft SG 100% is a nonionic softener recommended for use on cuprammonium, viscose, acetate, rayon, filament and staple fibers and in the manufacture of rayon staple and synthetic fibers for smooth surface. It is claimed to give a scroop effect of silk-like character to filament rayon goods and reportedly does not change dyed shades or cause bleeding. SG 100% Type 1195 is said to be especially stable to acids, while SG 100% Type 1200 is especially suitable for acetate rayon.

Basosoft HS, a cation-active type, is a highly substantive finishing and softening agent for textiles of all kinds and an antistatic preparing agent for man-made fibers. It is used mainly for cotton, cuprammonium, viscose, rayon; knitted goods; nylon hose; finishing of stockings in combination with Textile Wax W.

Basosoft MW, another cation-active type, is said to be particularly suited for knitted goods, such as tricot, hosiery, and yarns, and as a preparing agent for rayon staple.

Basosoft HT is predominantly anionic at pH 7-11 and cationic at pH 4-6. The product is stable to heat and is said to have special use in the dyeing and finishing of yarn in cheese form with rapid drying. Winding properties of the yarn reportedly are improved considerably after treatment with this product. It is also recommended by Putnam in heat setting of synthetics and in Schreiner finishing of cotton and rayon fabrics where a soft hand is obtained.

Basosoft TS, an anionic type which has limited stability to hard water, is said to impart a soft, full hand to fibers, yarns and woven and knitted fabrics. It reportedly is used mostly on cotton and rayon and for stiffening and filling finishes for dress and lining materials.

Basosoft UV, an anion-active type, is designed to impart soft, full hands on rayon fabrics and yarns and mixed fabrics containing wool. It reportedly can also be used in "wash-and-wear" finishes.

Basosoft AF 100%, a nonionic, reportedly yields a soft, smooth hand on all types of textiles in form of loose fibers, yarn, piece goods, and knitted fabrics, especially for rayon staple and cuprammonium fibers. It can be used in dyebaths with direct and basic dyestuffs.

Basosoft AFZ 100%, a nonionic, is used mainly as a preparing agent for filament and staple fibers, rayon and other fibers.

Technical bulletins covering the nature, properties, application details, directions for working, etc, are available from Putnam Chemical Corp for each of the above softeners.

• NAMES IN THE NEWS •

Bixler

Moretex Chemical Products has appointed **Dean Bixler** as research director. This newly created post leaves **George M Haynes** as technical director, and points the way for additional development on deacetylated chitin and many other products.

Dr Bixler joined Moretex from the Organic Research Department of Olin Mathieson, New Haven, Conn, according to Moretex, where he has been for the past five years, having previously been with Buckeye Cotton Oil Co, Division of Proctor & Gamble, Cincinnati, Ohio.

The election of **Robert Rhodes**, formerly a district sales manager, as assistant secretary and director of the W F Fancourt Co, Philadelphia, Pa has been announced.

Rhodes had been a sales executive with the company for the past six years. Previously, he was associated with the Laurel Soap Mfg Co, Philadelphia, for three years, and with the Florence Thread Co, Riverside, NJ, for three years.

Other officers of the company re-elected are **Thomas Lindley**, vice president and director; **Josephine Patla**, secretary and assistant treasurer, and **Isabelle Fancourt**, treasurer.

President Eisenhower's nomination of **James H Wakelin** for the post of Assistant Secretary of the Navy—Research and Development was confirmed by the Senate on June 29.

Dr Wakelin served as director of research for Textile Research Institute from 1951-1954, following which he surrendered his administrative functions to set up his own consulting firm. Since that time, however, he has served TRI as a research associate.

Dr Wakelin, a member of the Metropolitan Section, AATCC, served in the Navy from 1943 to 1946, leaving as a lieutenant commander to become director of the Field Survey Group of ONR Project Squad. He joined TRI in 1948.

R E Leach has been appointed manager of the Marietta, Ohio plant of American Cyanamid Company, and **A C Fennimore** has been named manager of the company's Willow Island, W Va, plant. Both men were assistant managers previously.

J W Dykes, who has managed both locations for over 10 years, has been named manufacturing management consultant to the division. He expects to retire from Cyanamid later this year, after 41 years of service with the company.

Continued growth in the business of the Marietta plant reportedly has prompted the establishment of separate plant management. The Marietta plant makes brightening agents, chemicals, dyes, pharmaceuticals and ultraviolet absorbers. Willow Island makes inorganic pigments, melamine, petroleum catalysts, pharmaceuticals, aniline and miscellaneous chemicals.

Cyanamid has also announced the appointment of **Martin B Friedman** as manager of the advertising and promotion department of its Organic Chemicals Division.

Mr Friedman has been with Cyanamid since 1954 when he joined the company's textile chemicals department. He was named advertising and sales promotion manager for the department in 1957 and in 1958 became assistant advertising manager for the Organic Chemicals Division.

Since March of this year, he has also served as marketing counselor to the Fibers Division in connection with the introduction of Cyanamid's new Creslan acrylic fiber.

Alfred B Cherry has been appointed sanitary engineer for Cyanamid's Organic Chemicals Division.

Mr Cherry has been with Cyanamid since 1951. He has served as sanitary engineer for the Bound Brook plant of the Organic Chemicals Division since 1957.

Caroline Boyer has resigned her position as head of the product information service of the Public Relations Department at American Viscose Corp. Her future plans include lecturing and free-lance writing, concerning man-made fibers and fashion fabrics, on a consulting basis.

Appointment of **William M Burr Jr** as organic chemicals sales representative for Ohio has been announced by the Organic Chemicals Division, Dewey and Almy Chemical Division, W R Grace & Co.

Burr was formerly with C K Williams & Co.

May

Frank W May has been named vice president and general manager of Ansbacher-Siegle Corp, a division of Sun Chemical Corp.

Mr May has been associated with Ansbacher-Siegle since 1957, when he joined the company as plant manager. The following year, shortly after Sun Chemical acquired Ansbacher-Siegle, he was named general manager.

Mr May has been general manager of Ansbacher-Siegle during one of its most rapid growth periods. The company, one of the nation's leading producers of organic pigments, has been a center of manufacturing activity on Staten Island, NY, for more than 100 years. Under Mr May's direction the company is currently adding an 18,000-square-foot building to house warehousing and shipping facilities. In addition, plans are under way to incorporate its Harrison, NJ manufacturing operations into its central plant at Rosebank, SI. Mr May expects that this move will be completed some time this Fall.

Morey Kaplan, an instructor at the Philadelphia Textile Institute, took part in a reciprocal training program at the Clarkesville Finishing Plant, Clarkesville, Va, and at Beaunit Mills, division of Burlington Industries, Brookneal, Va, from June 22nd through July 31st.

Kaplan conducted three two-hour classes weekly at the two plants for the employees. Instruction was in basic mathematics, chemistry and physics. The plant in turn provided a training program in worsted dyeing and finishing for Kaplan.

PTI officials feel that this program, the first of its kind ever conducted by the Institute, could possibly lead to similar programs with other companies, giving the college an opportunity to provide greater service to the textile industry and offer practical training for members of the faculty.

Matthews

Appointment of **Frederick R Matthews** as manager of the Silicone Specialties Division was announced recently by Dow Corning Corp.

Mr Matthews will continue his duties as manager of the Greensboro, NC plant in addition to assuming his new responsibilities, and will report to **A William Rhodes**, former manager of the division and a member of Dow Corning's management committee. Mr Rhodes has been assigned new responsibilities for company planning and will continue as manager of market research.

Divisional management responsibility has been transferred from Midland, Mich, to Greensboro. Silicone specialties sales and advertising activities will remain in Midland and will continue to report to **O D Blessing**, vice president and sales manager of Dow Corning.

Louis A Guglielmo, assistant to the manager, Silicone Specialties Division, will transfer to Greensboro to continue his responsibilities in the area of product and market development and packaging.

Mr Matthews joined Dow Corning in 1956. He was transferred from Midland to Greensboro in August, 1957, to manage the new plant facility that produces Dow Corning's consumer and other speciality products.

Mortimer P Schester, former president of Polytex Adhesive Corp, has joined the market development staff of National Starch and Chemical Corp. National will continue the operation of the Polytex facilities at Wallington, NJ, where, it is reported, an expanded line of Polytex adhesives, coatings, and related products will be manufactured.

Schester

Draves

Carl Z Draves will retire from General Dyestuff Co at the end of this month after twenty years with the firm and will take up new duties in September as an instructor in chemistry at Brooklyn College.

Dr Draves, a past president of AATCC (1940-41) and formerly Editor of *Proceedings* (1950-55), has had considerable teaching experience as a full-time associate assisting in general, analytical, industrial, and physical chemistry at the Univ of Washington, 1920-1925; extension course in general chemistry at Rutgers Univ, 1928-9; and organic chemistry (evening session) at Hunter College, 1944-50.

Dr Draves joined General Dyestuff Co in 1939, where he has been concerned with application of textile chemical specialties and technical literature for dye application. It was at GDC that he led the development of the first successful printed soil cloth for detergency tests.

Previous service was with Ludlow Mfg & Sales Co, from 1931-1939, where Dr Draves was concerned with the chemistry of processing bast fibers. It was here that stainless-steel machines for boiling, bleaching, and dyeing linen yarn in package form were first introduced.

Dr Draves was born in Wilmot, SD, August 22, 1894. Following his graduation from Univ of Washington in 1917 with a BS degree, he served in the US Army, 1917-1919, leaving the service as a first lieutenant in the field artillery. He returned to the University of Washington after the war, and was awarded a PhD in chemistry, mathematics, and physics in 1925. He began his career thereafter with E I du Pont de Nemours & Co, Inc in dye application. While with Du Pont, Dr Draves was instrumental in the introduction of the spectrophotometer for practical standardization of dyes and the invention of the Draves test for evaluation of wetting agents.

Dr Draves married Cornelia F Powell in 1918. They have four sons and two daughters.

Lewis

Stanley Lewis has been appointed director of marketing for General Aniline & Film Corp.

In his new position, Mr Lewis, formerly a marketing executive for Lever Brothers of New York, NY, will concern himself with those phases of the Corporation's marketing operations which include sales, advertising, sales promotion, distribution and organization.

Following the June 2 meeting of the Textile Research Institute's board of trustees, **William E Clark**, board chairman, announced the following committee appointments for the coming year:

Executive Committee—**Russell W Peterson**, chairman, **Bruce B Allen**, **William E Clark**, **Milton Harris**, **W W McLeod**, **Walter Regnery**, and **Levon M Yacubian**.

Finance Committee — **Bruce B Allen**, chairman, **Paul C Alford Jr**, **William E Clark**, **J H Dillon**, and **Russell W Peterson**.

Other committee chairmen, include **Levon M Yacubian**, Long-Range Planning; **Milton Harris**, Fellowships; **Carlyle Harmon**, Staff Policies; and **Richard T Kropf**, Meetings.

The promotion of **Julian J Hirshfeld** to group leader, finish applications research, for the Chemstrand Corporation's Applications Research and Service Department has been announced.

Dr Hirshfeld joined Chemstrand in 1956 after holding previous positions as research chemist with Deering Milliken Research Corp, Dan River Mills, and Valdese Mfg Co.

Hirshfeld

Smith

Appointment of **Parker B Smith** as director of sales administration of Century Chemical Corp, New York, NY, has been announced.

Before joining Century, Mr Smith was general manager of the International Department of The Borden Chemical Company specializing in export licensing and administration of foreign subsidiaries.

In preparation for expanded industrial chemical sales activities next year upon completion of its acrylonitrile plant, the Sohio Chemical Company of Lima, Ohio has announced the addition of two industrial salesmen. Sohio Chemical Co's present industrial sales staff will be augmented by the addition of **V C Page**, serving accounts in the Southeast, and **J F Murray**, who will be responsible for a territory covering Northern Ohio, Pennsylvania and New York.

Sohio's process for the manufacture of acrylonitrile and acetonitrile reportedly will be in production in 1960. The sales office for these products, as well as the present product line, which includes anhydrous ammonia, aqua ammonia, nitric acid, chemical grade urea and 83% ammonium nitrate solutions, will remain at Lima, Ohio.

Ames

James K Ames has been appointed to the newly created position of manager of field sales, Colton Chemical Co, a division of Air Reduction Co, Inc. Mr Ames, with headquarters in Cleveland, will direct the field sales force in selling Colton products, including a full line of polyvinyl acetate and polyvinyl alcohol synthetic resins.

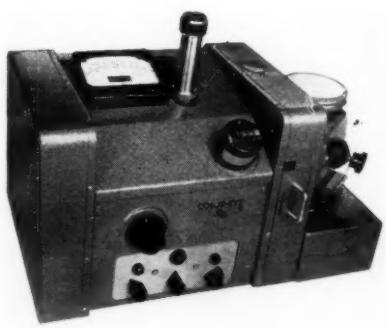
TECHNICAL LITERATURE

(Literature is available from sources shown in italics)

AUTOMATION DER STRUMPFAUSRUSTUNG DURCH DIE BELLFOUR COLORPLAST MASCHINE——*Eugen Bellmann GmbH, Hagen-Haspe, Germany*——This 8-page, illustrated brochure covers, in English and in German, details of the Bellfour Colorfast Machine, a unit for the automatic dyeing and finishing of ladies' hose.

The following topics are discussed: Automation of Hosiery Finishing? What is automatized? Which stockings? What is the result? Which is the ideal course of operations to be aimed at in the stocking industry? Operation of the Colorplast Machine; Production and possibilities for usage; Installation of the Colorplast Machine; Technical data; Other items in the Company's manufacturing program.

COLOR-EYE MODEL D——*Instrument Development Laboratories, Inc, 67 Mechanic St, Attleboro, Mass*——This brochure covers IDL's new model of Color-Eye, a dual-purpose colorimeter and abridged spectrophotometer, which is said to combine the advantages of earlier models with several important new features.



"Model D" Color Eye

DEWEY AND ALMY OWENSBORO PLANT —— *Dewey and Almy Chemical Div, W R Grace & Co, Cambridge, Mass*——This brochure describes products available from, and contains detailed information about, Dewey and Almy's new plant in Owensboro, Ky.

The brochure includes a summary of products to be manufactured at the midwest location, including vinyl acetate polymers and copolymers and butadiene styrene latices in the organic chemicals field.

The use of automation to insure uniformity of products and flexibility of facilities is covered in detail.

DYESTUFFS FOR WOOLEN GOODS PLEATED BY THE SI-RO-SET PROCESS——*Bulletin T-997, Sandoz, Inc, 61 Van Dam St, New York 13, NY*—— The Si-Ro-Set finishing process has been developed by the Commonwealth Scientific and Research Organization in Australia for producing durable creases or pleats in woolen goods. According to Bulletin T-997, it consists essentially in treating the goods with a dilute solution of ammonium thioglycolate, followed by heat setting of the creases or pleats on a steam press or in autoclaves and steaming chambers.

The bulletin goes on to state the following:

"The dyed goods are sprayed with a 5% Si-Ro-Set solution. Normally, the uptake of moisture should amount to 40% of the dry weight of the goods. The most durable pleating effects are obtained at pH 6.5. Acid dyeings must be carefully neutralized before the finish is applied. The Si-Ro-Set solution is very sensitive to metals, but it is not affected by aluminum nor by synthetic materials.

"Setting should be carried out within 15 mins after spraying. Trouser creases are set on the Hoffman steam press, first for 20 secs at a minimum pressure of four atmospheres, then for 20 secs without steam, and finally for 20 secs with vacuum. Pleats should be steamed for 3-5 mins at 1.4-1.7 atmospheres, or for at least 20 mins without pressure.

"All these operations, neutralization as well as the actual pleating, are apt to affect the shade of dyeings. Dyeings of Omega Chrome, Metomega Chrome, Lanasyn and Brilliant Alizarine Milling dyestuffs can be neutralized without undergoing a significant change of shade, but the acid levelling dyestuffs often show appreciable differences, depending upon their migration properties and fastness to water and alkalis. The anticipated change of shade must be taken into account in sampling, especially when combination shades are involved. In view of this difficulty, we recommend the use of dyestuffs such as the neutral dyeing Xylene Fast P, Brilliant Alizarine Milling, Lanasyn and Metomega Chrome colors, which do not require neutralizing.

"Generally speaking, the Hoffman press used for producing trouser creases has the least effect on the shade, and there is a whole series of dyestuffs which withstand this procedure satisfactorily. The conditions of steam setting in autoclaves (the pleating procedure) are much more rigorous; dyestuffs which are hardly affected in the press may undergo a marked alteration of shade during this operation. Many of the 1:1 metal-complex and some afterchroming dyestuffs are partially destroyed or demetallized through the reducing action of the Si-Ro-Set solution."

The bulletin presents more than five pages of tables listing information on the behavior of Sandoz dyestuffs in the Si-Ro-Set process. The data represent the results of tests with dyeings of 1:1 standard depth. Ratings are given for the change in shade in the Hoffman press,

the change on steaming for five minutes at a pressure of 1.7 atmospheres, and the change on steaming for 30 minutes without pressure (100-120°C).

FATTY ACIDS IN MODERN INDUSTRY——*A Gross & Co, 295 Madison Ave, New York 17, NY*——This revised catalog includes up-to-date specifications on the complete line of Groco stearic and oleic acids, tallow fatty acids and glycerides, coconut and other vegetable fatty acids and glycerine; a chart showing the component fatty acids in these products; and a list of the standard analytical test references used in the industry.

Most of the revisions in specifications and composition reflect improvements which have been made in Groco fatty acids since the last edition of the catalog was issued early in 1958.

FAIRCHILD'S DICTIONARY OF TEXTILES——*Business Book Div, Fairchild Publications, Inc, 7 East 21th St, New York 3, NY; $25.00*——This completely new 627-page dictionary, which contains 12,000 definitions of textile fibers, fabrics, finishes and processes, is a staff-prepared project on which much help was gained from industry, various research organizations, museums and technical societies. It was edited by Stephen S Marks, editor of *Daily News Record.*

Present-day terminology based on standard definitions are given, along with complete descriptions of fabrics. Man-made fibers, both past and present, are included in the Dictionary and distinction made between the processing, generic terminology and trademarks of both domestic and foreign fibers.

HTR PRICE LIST——*Hatch Textile Research, Inc, 25 East 26th St, New York 10, NY*—— Hatch Textile Research, Inc's latest price list includes several new tests, including "wash and wear" tests now in great demand, chlorine-retention test, thickness test, and accelerated laundry test for colorfastness.

HEAVY DUTY RAILWAY SEWING MACHINE; HEAVY DUTY PORTABLE CHAIN STITCH PIECE END SEWING MACHINE——*Birch Brothers, Inc, 32 Kent St, Somerville 43, Mass*——Circular No. BB900 illustrates and describes the heavy duty railway sewing machine, which is designed primarily for joining ends of heavy carpets and rugs up to 18 feet wide, but reportedly will handle other heavy wide materials just as easily.

Circular BB870 illustrates and describes the heavy duty portable chain stitch piece end sewing machine, which also was developed primarily for joining ends of heavy carpets and rugs, but which will handle other heavy fabrics.

The portable unit is recommended when cramped space prohibits use of the railway machine.

HOW WOOL IS MADE INTO FABRIC——*The Wool Bureau, Inc, 360 Lexington Ave, New York 17, NY*——This new wool processing chart, which was prepared by Martha Jungerman, director of the Wool Bureau's Department of Education, sells for $2.00. The 23" x 28" chart illustrates with diagrams and samples the production steps from fleece to fabric for the woolen and worsted systems.

It is designed for use by educators, mills, manufacturers, and retailers.

INSIDE STORY OF AN AMAZING NEW PAPER PRODUCT——*American Viscose Corp, 1617 Pennsylvania Blvd, Philadelphia 3, Pa*——This direct mail piece has been designed by Avisco to promote Scott Paper Co's Dura-Weve, a new product reinforced by Avisco rayon scrim. Directed to potential customers in several fields, the 16½" by 14" brochure, folding down to 8¼" by 3½", includes a sample of Dura-Weve, allowing the recipient to see, handle and test the end-use possibilities in the wide range of products it describes. A die cut window, showing an aqua Dura-Weve sample gives the impression of a three-color printing to the mustard yellow and black folder.

Dura-Weve, which, it is claimed, combines the best features of paper and cloth, is made by bonding Avisco rayon scrim between layers of Scott wet strength Perf-embossed paper. Dura-Weve is said to look and feel like cloth, to be lint free, to have amazing strength and tear resistance, to drape softly and beautifully, to be quickly absorbent with high wet strength, to resist heat, and to be capable of being printed on standard presses in colorful patterns and designs. Table cloths, summer drapes, headrests, towels, hospital gowns, and industrial clothing and wipers are some of the items made of Dura-Weve.

NONWOVEN FABRICS—AN UNBIASED APPRAISAL——*$15.00; Nonwovens Associates, PO Box 328, Cambridge 39, Mass*—— This 140-page report was prepared by a group of recent graduates of the Harvard Business School.

A comprehensive study of fabrics produced through bonding individual fibers together by chemical, mechanical, or thermal means, without the need for yarn interlacings, the report is designed to provide a complete, unified picture of the nonwoven fabrics industry of today, and to present an objective preview of the potential problems and opportunities for this field in the future. Included are chapters on: Manufacture, Finishing and Dyeing, Fibers, Binders, Applications, Research and Development, Marketing, and Implications for the Future. In the appendices to the report are discussions of the patent and secrecy implications in the nonwovens field; as well as listings of patents and companies, a detailed bibliography, index, and glossary of technical terms.

ONYX DATA FILE CATALOG——*Onyx Oil & Chemical Co, Jersey City 2, NJ*—— This new catalog describes Onyx' complete line of textile finishing compounds. It features concise descriptions of each compound, indexed by product classification.

The Data File serves as a permanent catalog. From time to time, supplemental pages will be issued to describe new products and changes.

QUESTIONS AND ANSWERS ABOUT WALLERSTEIN—*Wallerstein Co, Div of Baxter Laboratories, Inc, Wallerstein Sq, Mariners Harbor, Staten Island, NY*—— This 12-page booklet answers the following questions about the Wallerstein Co: who is Wallerstein, whom does it serve, what exactly does it make, whose products does it use, where is it situated, when was it founded, how large is it, which path is it taking, and why does it want you to have this booklet.

SANDOZ RECOMMENDATIONS FOR DYEING FASTER, BARRÉ-FREE COLORS ON STRETCH NYLON TIGHTS——*Bulletin T-993, Sandoz, Inc, 61 Van Dam St, New York 13, NY*—— This bulletin states that . . . a number of full fashioned mills are producing stretch nylon tights. The popular shades are black and red, also a bright royal in fair amounts. Light shades, which are not numerous, are being dyed with disperse colors."

The bulletin discusses recommended dyeing procedures and offers specific formulas for each.

UNITERM INDEX OF 6,143 CHEMICAL PATENTS ISSUED IN 1954—— *Information for Industry, Inc, 1000 Connecticut Ave, NW, Washington, DC*—— This new index extends coverage of IFI's Indices to 48,512 chemical patents issued by the U S Patent Office from 1954 through June 30, 1959.

Lynn J Bartlett, IFI president, has stated that the 1954 Index marks another step toward accomplishment of the firm's objective of compiling annual Indices of chemical patents for the years back to 1950, while currently issuing every two months accumulative Indices of new chemical patents granted.

The Indices for 1954 through June 30, 1959 provide more than a million and a half references to technical and scientific data contained in the 48,512 chemical patents covered, Bartlett added.

IFI began its Uniterm Indexing of chemical patents granted in 1955. The back indexing, Bartlett explained, was undertaken at the request of IFI's more than 100 domestic and foreign clients. When the 1950 Index is completed, he said, the Indices for the years 1950 through 1961 will cover more than 100,000 chemical patents with over two and a half million references. This will provide the most complete collection of current technical and scientific information ever made available by a single index system, Bartlett stated.

Information disclosed by the Uniterm Indices is used by IFI clients in basic and applied research, new product development, market research, and in patent licensing and management.

SOLANTHRENE PRINTING BLACK 2J DOUBLE PASTE——*Francolor Inc, 148 Hamlet Ave, Woonsocket, RI*—— Technical leaflet No 228-E gives uses, printing method and recipe, and principal characteristics of this vat color.

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